THE FARMERS' REGISTER.

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EDMUND RUFFIN, EDITOR AND PROPRIETOR.

BUTTER MAKING.

From the Cleveland Daily Herald.

Travelling across the Western Reserve, a year or two since, in company with a gentleman from New York, I was surprised to hear him state that "in the eastern markets *Ohio butter* was a by-word, a term synonymous with *dirty butter.*"

I attempted to defend the character of the production of our dairies, and we compromised matters for the present, by agreeing to rest the decision upon the samples we should meet with on the tables of the public houses in the course of the journey. In the end, I had the mortification to find, in a majority of instances, either an oily, rancid, or a ring streaked and spotted article was set before us, that came within the limits of his description.

This should not be. Butter is one of the staples of northern Ohio, and that which is well made will, in all instances, command a cash price sufficient to compensate the dairyman for the extra labor he bestows upon it.

My wife and myself claim the merit of being adepts, or as political demagogues would say, "*real workies*" in this business, founded on a practical experience of near twenty years.

Our method I will detail; first premising that it is perhaps no better than that pursued by many others, for there is here and there a family that furnishes a prime article, though a large share of that which comes into market is of an opposite character. The publication of our method may induce others to throw more light on the subject. In our hands it is invariably successful, but it is like certain chemical processes, made up of a series of manipulations, the omission of any one of which may derange the whole and endanger the result. Every part must be carefully carried out.

1. *Choice of cows.*—A judicious selection from the common stock, I deem to be equal if not superior to any of the imported. The Devons and Bakewells I have tried, and found them deficient in the quantity of milk they afford. The Durhams I have not tested. The Gore breed was introduced into Portage county some years since, by a gentleman, I think, of the name of Thorndike, from Massachusetts. A few of the descendants and crosses are to be met with in the south part of Trumbull county, and they prove to be the best of milkers. The quantity and quality of the milk surpass that of any other breed in our section of the country.

2. *Change of pastures.*—To insure the production of the largest quantity of butter, a frequent change of pastures is required. A farm should be so fenced that the cows can be changed into a different lot every four or five days.

3. *Salting.*—A constant and full supply of salt should lie before our cows in some secure place. They will eat moderately what they require. If only occasionally furnished, they often take it in quantities so large, as to act medicinally to their injury.

It corrects almost any bad quality of the milk, arising from the eating of aromatic or bitter herbs, and also much of the natural animal odor, that frequently impairs the sweetness of butter.

4. *Water.*—It is perhaps superfluous to add, that without a full and steady supply of this article for his cows, the hopes of the dairyman will never be realized. Driving them once or twice a day to a watering place will not answer the purpose.

A large and deep excavation can be made in the several pasture lots, or between two or three of them, so as to answer the purpose, except in very protracted droughts. It should be so enclosed that cattle can approach it and drink, without running into it.

5. *Driving—kind treatment.*—Many a faithful cow has been seriously impaired by a careless boy driving her furiously to and from the pasture. All harsh treatment of any kind, as scolding, striking, kicking, &c., is also detrimental. I have known many cows rendered worthless from these causes.

The utmost kindness and gentleness of manner must be shown on the part of those who manage our stock. I once dismissed a hired man for striking my cows. Too much cannot be said on this point.

6. *Milking.*—This process should be done systematically at regular periods of the day. Sunrise and sunset are perhaps the best periods; for immediately after the one, and before the other, cows in hot weather feed to the best advantage. They are so much creatures of habit that the milker should be changed as rarely as possible. A stranger is always regarded as an unwelcome visiter by a milch cow.

7. *Cleanliness with the utensils.*—The pans, pails, strainers, bowls, churn, and every implement employed in butter-making, must not only be well washed, but they must be thoroughly scalded with boiling hot water, and be perfectly dried afterwards, either in the sun or before a fire. This must be repeated every time they are used. Merely pouring boiling water upon them when loaded with sour milk or cream, will only serve to scald in the bad flavor, if I may use the expression. Wash them at first, and then scald them thoroughly, if you would have sweet butter.

There are certain filthy practices which slatterns fall into, that should be corrected—such as wetting the cow's teats with milk, and permitting it to drop into the pail—milking in the morning without washing the hands, &c.

8. *Milk-house and buttery.*—In hot weather a good spring-house is necessary for the making of butter. It must be constructed of either brick or stone, and in no instance of wood, as that article never fails, in such a situation, to become mouldy, and impair the flavor of butter. It must be built so that it can be thoroughly ventilated. A window should be placed on the north, east, and west sides, which must be furnished on the outside with wire gauze screens, and on the inside with tight shutters. During the day, the shutters must be closed, and at night must be raised.

A spring may be dispensed with—and it is even

problematical whether it does not, upon the whole, do as much injury by imparting dampness, as it does good by lowering the temperature. A well constructed house without the spring, will answer the purpose. It should be shaded with trees, or arbors of grape-vines. All mouldy and decaying wood-work, boards, boxes, barrels, &c., must be kept out of it—also all foreign substances, as meats, fish and vegetables. The air of my spring-house was ruined for a week or more, merely by placing in it a few mackerel.

At the approach of autumn, a cool and well ventilated buttery, shaded well without and kept clear of all foreign substances that can impart a bad flavor, is preferable to a spring house, as the latter becomes too damp, at that season, to allow the cream to form well.

9. *Straining the milk.*—This should be attended to without delay after milking. The new fashioned tin strainer (a tin pail with a wire gauze strainer) is far preferable to the old fashioned cloth strainer. Either tin pans or stone crocks may be used for holding the milk; I know of no preference, except the tin work is liable to rust in a damp spring house. Earthen crocks should never be used, as the lead in glazing may act chemically with the cream or butter, so as to poison it.

10. *Skimming the milk.*—In hot weather the milk may be allowed to curdle before this operation is performed, but if it be delayed any longer, a thin, watery fluid will form between the milk and the cream, after which the good qualities are inevitably destroyed. It is necessary, in midsummer, to skim the milk every morning and night. This point must receive the strictest attention. Neglect of it often gives a streaked or mottled appearance to butter, as well as impairs its flavor.

11. *Cream.*—As soon as it is collected it should be placed in a stone crock, which should be either hung into a well, or set up to the brim in the spring within the milk house.

It has been thought by some that the cream improves, or matures, by exposure to the air after it is collected, and that placing it in a situation as cool as a well, or spring, is unfavorable for that change. This view may be correct late in autumn, when it becomes sometimes necessary to mature it by artificial heat, but during our hot and dry summers, we believe the course recommended is to be preferred.

12. *Churning.*—This operation must be resorted to as soon as a supply of cream is obtained, and in hot weather cannot safely be delayed beyond the third day.

A variety of patent churns have been palmed upon the public, none of which, we believe, is to be preferred to the old fashioned, upright dasher, or the barrel. We at present employ the former, and by the aid of a well adjusted spring pole, connected with the top of the dasher-rod, can fetch twelve or fifteen pounds of butter, in from fifteen to twenty-five minutes, without any violent efforts.

The barrel-churn is not as easily cleansed.

13. *Working of butter.*—This must be repeated until every drop of the buttermilk is expelled; twice or three times will be necessary, nor must it be delayed too long, till a change begins to take place in the remaining buttermilk, as that will impair the flavor of the butter, which no subsequent treatment can restore.

The operation must be done in a bowl, by the aid of a wooden spatula, or paddle, and in no instance should the hand come in contact with the butter, if it can be avoided, as the warmth of the individual renders the butter oily and bad-flavored.

Some persons destroy its sweetness and richness by washing out the buttermilk by means of cold water, a practice always to be avoided.

14. *Salting.* The salt should be added at the commencement of the first working. Much of our western butter is injured by the employment of the common New York salt. The finest *ground* article should be used. It can now be obtained in sacks, of our merchants, at a reasonable price.

15. *Preserving butter.*—That made in the spring and summer may be laid down in *stone* crocks, and the surface covered with brine of strength sufficient to bear up an egg. In winter this will answer all the purposes of cookery, and even for table will be sweeter than much that finds it way there. J. P. KIRTLAND.

Rockport, Oct. 14, 1842.

A CHEAP UNDER-DRAIN.

For the Farmers' Register.

Below is the plan of a blind ditch, claiming notice on the ground of cheapness. By keeping a strict eye to economy, expedition and durability at the same time, this plan has suggested itself to me as approaching nearer the means of the small farmers than any I have seen proposed, practicable by those with lands and pockets similar to mine; for a too common objection to the many plans projected for this purpose is, that they drain the pocket rather more sensibly than the land. The plan here recommended, to say the least of it, is one not costly, either of money or time, and one from the cost of which no one will be deterred from a trial.

In my corn-field of last year, 1841, there was a piece of ground, about two acres, rendered almost totally worthless by the superabundant moisture in the surface soil, in consequence of the hard and impenetrable nature of the subsoil. In a subsequent arrangement of my crops, this spot was thrown into the shift for corn again for the present year. Having determined last winter, from last year's experience, not to cultivate it again in its then condition, I accordingly set about draining it on a cheap plan. The land being stiff and hard enough to support a ditch of any form, and situated rather flat, I commenced a ditch at a distance off, down a gentle slope, sufficient, by maintaining a level along the bottom, to gain the depth of two and a half feet when reaching the place designed to be drained. From this ditch, brought up to the edge of the flat, I ran off several branches in different directions, aiming each arm along the wettest places, maintaining the same depth, and no wider than the width of an ordinary weeding hoe, with which tool and a grubbing hoe the whole work was performed, with the exception of a spade to scrape and level the bottom. After allowing this to remain open for several days, and the surface had become freed from standing water, I gathered up and laid in the longest, straightest, and stoutest corn-stalks most convenient to the

spot, to the depth of about one-third of the ditch, dropping them one in a place, so as not to have too many ends immediately together, which would leave cavities for the admission of the dirt. I then put on a coat of clean pine tags, sufficiently close and thick to prevent the dirt from reaching the stalks on the bottom, slightly packing them, and then drew in the dirt, which has a depth, from the tags to the surface, sufficient for common tilth. To finish it, I raised it a little, allowing for its sinking, and for the purpose of preventing its being washed by heavy fal's of water.

The plan of this drain may be objected to by some, on the score of durability. This certainly is questionable ; but as to economy and expedition none can object, as the whole of the work may be done by any hand capable of using a hoe and a spade, as all field hands are, without the services of either ditcher, sawyer or carpenter. Corn-stalks and pine-tags, I know, are very destructible when exposed to the influence of the atmospherical air, but being placed at the depth here required, almost totally excludes this agent of decomposition, and I am inclined to think their duration would far exceed the expectation of many. I once observed, in a recently broken mill-dam of long standing, green pine brush that seemed to have been thrown in for some purpose during the construction, and buried there for a time, beyond recollection, perhaps for ages, that had so far retained their original state, that even the color of the leaves was but slightly changed.

There is a path across the lower and main drain of this ditch, over which loaded carts and teams frequently pass ; yet whenever the flat above is the least wet, there is always a stream of water proportioned to its wetness issuing from its mouth. The corn now standing on the piece of ground drained by this ditch, notwithstanding its being in corn last year, and the unprecedented wet season this, will multiply at least four or five times the product of the preceding crop.

TH. N. DELK.

Surry C. H., Nov. 8th, 1842.

ARTESIAN WELLS IN ALABAMA.

To the Editor of the Farmers' Register.

Greensboro, Ala., Oct. 28, 1842.

I have been intending for some time to endeavor to atone for my remissness in other respects by giving you some account of the Artesian wells which have been and are being bored in this part of the country, as being a subject of great intrinsic interest to one of the wealthiest regions of the south-west, and indeed to all prairie countries, which labor under the great inconvenience of a scarcity of water.

As you are no doubt aware, the prairies reach nearly across the states of Alabama and Mississippi, in a direction a little north of west in this state, and in a belt of some 30 or 40 miles, lying principally between latitudes 32 and 33° north. They are composed of a black calcareous clay, in which the carbonate of lime is found in considerable excess—in some instances as high as 60 per cent. The larger proportion of this description of soil is covered by a dense forest of oak, ash, hickory, elm, cotton wood, and, in quite a considerable portion, there are large forests of cedar, which no doubt vie in size and beauty with the far famed "cedars of Lebanon." Some of them square 2 feet at the but, and are of great height. The most of this black-land country, particularly where the oak and ash prevail, was originally covered with dense cane, and hence the whole of it is usually denominated the "canebrake," though very few vestiges of cane are still remaining. The general surface of the country is undulating, and the rotten limestone rock, which invariably forms the substratum to the soil, sometimes approaches within a few inches of the top, and is frequently entirely denuded by the washing rains, which constitute the greatest obstacle to keeping them in a permanently improving state.

The great fertility of the soil, the propitious latitude for the cultivation of cotton, and the facilities for navigation afforded by the numerous rivers issuing from the great spur of the Cumberland mountains above, all contributed to bring this belt of country into very early notice : but the difficulty of procuring water presented an insurmountable obstacle in the eyes of the first settlers, and as the soil is excessively wet and disagreeable in the rainy months of winter, very few of those who had much regard to comfort were at first induced to settle upon it. When the more wealthy class of planters, however, began to come in, the allurements of gain were too tempting to be resisted, and they combated the inconvenience of the want of a permanent supply of water, as they best could, by cisterns, seep-wells, and such other contrivances as suggested themselves to different individuals. So great a desideratum, however, as water was not long to be endured ; and the idea of boring Artesian wells entirely through the rock was, I believe, first successfully carried into practice by a man named Cooper, a native of Connecticut, who possessed considerable mechanical genius, and that particular turn of mind which is always on the "*qui vive*" for something new and striking. Not that the idea itself was really a new one, for Dr. Darwin, in his Phytologia, (Dublin, octavo, 1800, p. 239,) notices several instances of water rising much above the surface, and says, "the knowledge of this part of geology, concerning the formation of springs, may be employed for many useful purposes," &c. Thus where water, descending in high columns between the strata of mountains, is dammed up below by the materials which fill up the valleys, if a hill be bored in the valley deeper than the incumbent strata, it frequently rises much above the source of the new aperture, and sometimes above the surface of the ground. In sinking the King's well at Sheerness, the water rose 300 feet above its source in the well, as related in "Philosophical Transactions," vol. 74. Again he says, "In the town of Richmond, in Surrey, and at Islip, near Preston, in Lancashire, I am informed that it is usual to bore for water to a certain depth ; and that, when it is found, in both those places it rises so high as to *flow over the surface.* And, there is reason to conclude, that if similar experiments were made in many other places, such artificial springs might be produced at small expense, both for the common purposes of life, and for the great improvement of lands by watering them." He goes on to give many reasons for entertaining these opi-

nions, founded upon his knowledge of the strata of the earth, and states that, in "Hartford, Connecticut, there is a well which was dug 70 feet before water was found, and then, in boring an auger hole through a rock, the water rose so fast as to make it difficult to keep it dry by pumps till the hole could be blown larger by gunpowder, which was no sooner accomplished than it filled and ran over, and has been a brook for near a century." (Travels through Amer.: Lond. 1789.)

Whether the doctor was correctly informed as to this running-well in Hartford, I have my doubts; for, though I have visited the place, I never heard of it, nor have I ever been able to learn any thing about it from any person from there. As Hartford, however, is near Wadsworth's mountain, on the top of which is a very deep lake, it is very possible that some vein leading from it may have been struck, which caused it to flow over.

But to proceed with the matter before us. The prairies in this county extend up as high as Erie and Greensborough, on the east side of the Warrior river; and about half way between the two places is the largest; at the head of which is my summer residence. When I first came to this part of the country, settlers were deterred from going lower down into the prairies on account of the scarcity of water. In the course of the last year or two, however, that has become the finest watered portion of the country, by means of Artesian wells. Indeed every planter has it now in his power to have as much water as he wants, and in whatever place he wants it; if it is on the top of the highest hill on his plantation. Well-boring has become a trade, and contracts are almost universally made, "no water, no pay." For the first 4 or 5 miles from the head of the prairies it is usually obtained in great abundance by boring about 300 feet. In this distance they generally go through 3 or 4 strata of rock, and just before reaching water, the rock becomes so hard that a cast-steel pick has to be substituted for the auger with which the rotten limestone rock is bored. The hole perforated is generally about 3 inches in diameter and the auger is worked by pine poles connected together by a head and socket, which are successively added until the object is attained. To obviate the difficulty of drawing up the poles caused by the suction and pressure of the atmosphere, a small aperture is left near the centre of the auger, by which the air can get below it. The quantity of water sometimes thrown up from one of these auger holes is almost incredible, and shows the great pressure to which it must be subjected beneath the stratum perforated. I have seen one which throws up 50 gallons per minute, 5 or 6 feet above the surface, and it will run over the top of a tube 25 feet above the surface, though in a very diminished quantity. There are several others in the immediate vicinity nearly as bold, and in a few instances the water has forced its way out through the natural crevices in the rock, and runs all the year, though in comparatively very diminished quantities. The auger used is about 20 feet long, with a shank 1 inch in diameter, through which a half inch hole is bored to admit the air.

The number of Artesian wells in Greene and Marengo counties is probably nearly 500. The great quantity of water they throw out is supposed to have made the canebrake much more unhealthy than it formerly was, as it stagnates in the deep holes and ravines, which otherwise are generally dry before the sickly season. The dip of the bottom stratum of rock, beneath which the water is generally procured, averages about 20 feet to the mile, in going from north to south across the prairies, though there is no great uniformity in it, water being found in the same vicinity at very different depths. In Demopolis there is a running well 500 feet deep, and very near it there is one bored 600 feet without getting water. These are about the customary depths on the south side of Big Prairie creek, though on Cottonwood creek, one of its southern tributaries, the borings have been carried upwards of 900 feet in some instances without getting through the rock. To whatever depth, however, the rock is perforated, it is found to contain the same fossils, consisting mostly of scollop, cockle and oyster shells, though not of the same species we now find in Mobile. I have been shown some very perfect specimens lately which were bored up 540 and 570 feet below the surface. Pyrites or sulphuret of iron is also frequently bored out from a great depth, and as the little balls, called sulphur balls, in which it is found, are very hard, they frequently interfere very much with the boring.

The water procured from those wells is always impregnated pretty strongly with sulphur, and from the deep ones appears quite warm in winter. Persons accustomed to it, prefer it to any other, though it is unpalatable to those who are not. Stock of all kinds are very fond of it, and a cow will swim a creek in winter to get to it. From the few hasty and desultory hints I have been able, "currente calamo," to throw together, you will perceive that this is a very interesting portion of our country, both to the geologist and scientific agriculturist. The great susceptibility of improvement our calcareous soils possess, will at some future day render them extremely valuable; as instead of being exhausted, they improve by cultivation. Should I be able to steal an hour from the more pressing engagements of business, I purpose before long to give you some of the results of my observations and experience in the cultivation of prairie soils. At present my paper and time are both at the "Ultima Thule."

Yours, very respectfully,

ROBERT W. WITHERS.

FATAL EFFECTS OF CASTOR OIL ON A HORSE.

From the Tennesee State Agriculturist.

A case has recently occurred in England, in which the death of a horse was evidently produced by the effects of a quart of castor oil given as a purgative. It operated powerfully; but the animal soon died. On examination, a large intro-susception of the jejunum was discovered, and the mucous membrane of the stomach and intestines exhibited marks of severe inflammation."

I lately met with the above in an old number of a medical journal, which brought to mind too cases that fell under my observation at Lexington, in Kentucky, in which the death of two valuable

horses was supposed to have resulted from the same article, administered to them in about the same dose as a purgative. Symptoms of violent intestinal irritation ensued, and after a few days the animals died apparently exhausted by the powerful purging. I should give castor oil to a horse with great reluctance, and never if I could procure any other purgative. It is a pity that so little attention is bestowed upon the disorders of this invaluable animal by men of sense and intelligence, and that they are so generally turned over, when they fall sick, to the tender mercies of the ignorant but most conceited horse leech.

Rutherford Co., Sept. 1842. L. P. Y.

A MILLION OF DOLLARS LOST ANNUALLY IN MASSACHUSETTS.

From the Boston Cultivator.

Have you any place adopted, to save all the liquid excrements of your stock, for the ensuing winter? If not, the loss you must sustain will be fully equal to the whole value of their solid excrements.

If you have not a barn cellar, as every good farmer should have, as soon as he is able to make one, you have no excuse for deliberately subjecting yourself to this great loss. You can dig out the loam under your stables, it will be very valuable as a top dressing on your mowing lands, and then fill up the hole with muck or loam to absorb all the liquid excrements.

We have no doubt that the loss of liquid manures in this state, amounts to a million of dollars annually—we know from them a compost can be made equal in bulk and value to the solid manures. Our own practice, and the results of the most accurate experiments by others, leave not a doubt in our mind on this subject. Will you make the experiment for yourself?

Whenever you discover rigid economy about the manure heap, you will always find a corresponding improvement in the soils and crops.

He who starves his swine, must eat lean pork, and he who starves his crops may expect to go without bread.

WORMS IN THE HEADS OF SHEEP.

From the Boston Cultivator.

Worms in the heads of sheep result from a fly depositing its eggs, during the summer months, in the animal's nostrils.

The sheep knows this fly, and as soon as she hears it, she starts off, rubbing her nose on the ground for rods at a time, till she feels that the danger is past.

Mr. Colt, of Pittsfield, remarked to us, that during fly time, sheep would retire to the shade as soon as the dew was off, huddle close together, then by stamping and keeping their heads close to the ground, they could defend themselves from this troublesome and *often very fatal enemy.*

Having thus observed the habits of the sheep—he never salts them after the dew is off, for calling them out for this purpose would expose them to the attacks of the fly. He observed that his sheep crowded together where they could stir up the dust. He inferred from this, that the dust adhered to the nostrils and operated to protect them from the attack of the fly. So he ploughs spots, where his sheep congregate, that they may have the benefit of the loose earth.

Who has not seen the sheep sally out from the shade and crowd to feed, and before she has proceeded five rods, run suddenly back again, ploughing the earth as it were with her nose? She heard, or was attacked by the fly. Thus it is easy to tell when this dangerous enemy to the favorites of *Pan* is in the field and the flock requires your peculiar care and attention.

EXPERIMENT OF JOHN J. MARSHALL WITH BROAD-CAST CORN.—1842.

From the Farmers' Gazette.

The land selected was about five-eighths of an acre on the river bank just above the mouth of Whortleberry creek. It had been planted in corn for several years and badly cultivated, so that it was very foul, and was manured.

It was broken up for the first time on the 17th May with a two horse plough. There being a heavy coat of grass and weeds in it, the latter as high as a tall horse, it was cross ploughed with a single horse turning plough on the 30th May. The corn was sowed on the 18th of June, at the rate of very near four bushels of our common seed corn to the acre, and covered with a small turning plough very shallow. Each ploughing and the planting was after a rain. The corn came up in a few days and grew off rapidly.

When about a month old, (21st July,) being from 5 to 6 feet high on the richest part of the land, it began to budge just as very rank oats sometimes do, and in a few weeks nearly all the best of the patch was very much fallen and tangled. It continued green and growing, however, except that immediately on the ground, which rotted.

The fodder having begun to ripen, the corn was cut on the 19th September, with grass blades and weeding hoes. Two spots were selected which I deemed to be a fair average of the whole patch, each 9 feet square, in one the stalks weighed 55lb. and in the other 100lb. being an average of 82½lb. to 9 square yards, and at the rate of 44.367lb. to the acre. I selected a spot 3 feet square on which the corn had not fallen down though it did not stand as thick as the land would have borne it, in which the stalks weighed 27lb., being at the rate of 130.580lb. to the acre, estimating an acre to contain 4840 square yards.

The day on which the corn was cut proving cloudy, it was left on the ground till the middle of the next day, when it was put up like a top stack, the layer of stalks about 18 inches thick, and both ends left open. It has cured very nicely.

There are no ears of corn except a few small and immature ones. JOHN J. MARSHALL.

October 14th, 1842.

ANOTHER FLOATING ISLAND.

The New York State Mechanic, after giving some account of the floating island in Derwent Lake, near Keswick, in England, matches it with one in Clinton, in the north-eastern corner of New York. We copy what relates to it.

"Remarkable as this floating island may be, it is sarcely more so than one of a similar description in Clinton county, in this state. Several years since, Rev. J. W. B. Wood, a gentleman of an inquiring turn of mind, and then residing not many miles distant, made a visit to the spot, and his account was published in the Christian Advocate and Journal, of New York city.

"The lake in which the island is found lies in a deep gorge or rotten gulf of high table mountains, equally noted through the surrounding country for its "huckleberries" and its rattlesnakes, and called the Flat Rock. The water of this lake is very deep, and the island differs from the one above described in constantly floating. In fact, a number of pines were growing on it at the time of the visit of Mr. Wood, some of which were five or six inches in diameter. The surface is covered with the productions peculiar to marshy grounds, and though the soil is so soft that a sharpened pole may be thrust completely through, yet stray cattle have been discovered on it at various times. Strictly speaking, it is not an island, but a peninsula, and this will explain the apparent inconsistency contained in the last sentence. However, that the peninsula, or island, (whatever the reader may please to term it,) floats, and is disconnected from the bottom, is demonstrated from the fact, that the wind will cause it to change its position, varying some days many rods from the preceding. Were the isthmus, that acts as an anchor, severed, it would undoubtedly float on, with trees for sails, a complete floating island."

SUCCESSFUL MANUFACTURE OF CORN-STALK MOLASSES.

From the Philadelphia Public Ledger.

Mr. James L. Vaughan, of Henry county, Tennessee, has succeeded in manufacturing excellent and clear molasses from corn-stalks. A letter in the Nashville Banner in relation to it, says: "It is pronounced by all who have tasted it far preferable to that made from the sugar-cane. It has somewhat the appearance of honey, and the more you use it, the better you like it. The mill for grinding the stalks is very simple, costs only six dollars, and can be made by any common mechanic who has ever once seen it. With this mill, which would answer very well for an apple mill, and which runs with two horses, he produced one hundred and twenty gallons of juice per day. The yield of molasses from the juice as it came from the mill was as one to five. If planted early, and cut in August or September, Mr. Vaughan thinks about sixty gallons of molasses from each acre in corn might be obtained, and perhaps more. The corn which he used was planted very late in June, and a severe frost fell before he finished cutting it. To this frost, and to the fact that the corn had not sufficient time to mature properly, he attributes his failure in making sugar. Mr. Isaac Norman, the mechanic who constructed the mill, and who had been an old sugar planter in Georgia, says that he never saw finer syrup from the sugar cane, or which gave greater appearances of graining, and that it did not grain must be altogether owing to the frost, which fell the day before they commenced operations. Mr. Vaughan is, however, highly pleased with the success of his experiment so far, having demonstrated conclusively, that with a mill not costing more than six dollars, every farmer in Tennessee can manufacture his own molasses, and that of a superior quality. Another year, he hopes to add his sugar also. It must be mentioned that the 'refuse juice,' which is skimmed off in the act of boiling, makes a most excellent beer, and can likewise be made into excellent vinegar."

TIME OF RIPENING OF WHEAT ON SOUTH SIDE OF JAMES RIVER, 10 MILES BELOW CITY POINT.

For the Farmer's Register.

1818. Began harvest on June 25th.
1819. Began harvest on June 23d.

1822	"	"	"	8th.
1823	"	"	"	13th.
1824	"	"	"	11th.
1825	"	"	"	10th.
1826	"	"	"	12th.
1827	"	"	"	16th.
1828	"	"	"	12th.
1829	"	"	"	19th.
1831	"	"	"	16th.
1837	"	"	"	16th.
1839	"	"	"	13th.
1840	"	"	"	8th.
1841	"	"	"	21st.
1842	"	"	"	13th.

The variety of wheat principally sown was in the earlier years the bearded golden chaff, and in the later, the mountain purple straw. Since, about the year 1822, cutting was generally begun as soon as the wheat was well in the dough state. Prior to that time, never until the grain was nearly hard. In 1826 and 1829, harvest might have been commenced three days sooner, but for the pressure of other work on the farm. In 1841 we had a very cold, wet and backward spring, which no doubt postponed the ripening of wheat several days.

I regret exceedingly my inabilility to give the above list without interruption or omission.

E. RUFFIN, JR.

EXTRACTS FROM ENGLISH CORRESPONDENCE OF ALBANY CULTIVATOR.

I learn from Mr. Hebeler, his Prussian majesty's consul general, that Count Howpesch, a Belgian gentleman, has taken out a patent for the preparation of a manure, more powerful and cheaper than any yet invented. His plan is said to consist in fixing all the volatile parts of night

soil and other such substances, by means of the ashes of the volitic shale of Portland. The shale is employed in the first place as a source from which oil, turpentine, and other substances are extracted; the residue goes to the preparation of the manure, which is said to be converted somewhere on the Isle of Dogs, and sold in a dry state in the form of bricks. As the materials to be thus employed are inexhaustible, and at present almost valueless, it is expected that the preparation of the fertilizer in question will become a matter of great national importance. As people have become too wise to wonder at sugar being made from old rags, so will they be equally prepared to hear, that oil, and tallow and soap, are to be fabricated from the hardened mud of the coal mines; for such is "shale."

Nearly four thousand pounds have been already subscribed for the monument to the memory of the late Thos. Wm. Coke, Earl of Leicester. Prominent amongst the subscribers, is Lord Wodehouse, the Lord Lieut. of Norfolk, for £50, who had all through life been opposed to the deceased peer in politics. This is as it should be; when the interests of our country and the improvements of agriculture are to be served, all party and party jealousies should be thrown overboard. In the spread of improvement among the cultivators of the soil, all are more or less interested, and should combine therefore, for the general welfare.

ANOTHER "AMENDE HONORABLE." RENEWAL OF THE ROTATION DISCUSSION.

[It would be ungracious, and appear unkind, if we were to refuse admission to the following communication, understanding as we do, and confiding in the perfectly conciliatory and kind feelings which influence the writer. But, notwithstanding, we must confess that, like Falstaff, we are "still afraid of this gunpowder Percy, [i. e. the rotation controversy,] although he may seem dead;" and rather dread that our correspondent's designed peace-making explanations may tend to a like result, as in the noted case of the reconciliation of Sir Peter and Lady Teazle.

With the best wishes and great respect for both the late parties to this discussion, we shall leave them (and all others disposed to engage in it) to the care of our successor in editorial duties and responsibility.—Ed. F. R.]

For the Farmers' Register.

I did exceedingly regret that the controversy in which I was engaged with Mr. Peyton had become so personally offensive that it was necessary to arrest it. The subject in dispute I then considered, and still consider, as very important, and therefore wished to conduct it to a definite issue. In my first piece—that commented on by Mr. Peyton—I merely stated the result of my own observations and reflections, and this I did without the slighest attack upon any man, or upon any man's theory. A reply, however, soon appeared; and this reply (pardon me for saying so) presented, in several of its points, so strong a temptation to ridicule, that I had not the firmness to resist it. But if Mr. Peyton had been *acquainted* with me, I should have been spared the trouble of telling him, as I now do, in all candor, that I intended nothing disrespectful, or in the slightest degree personally offensive. All that I aimed at was a little playfulness, in which, perhaps, I am too prone to indulge, even in the serious matters of a personal controversy. I hope the above will be satisfactory to Mr. Peyton, to the respected editor, and to the readers of my favorite Farmers' Register.

If I had occasion to regret that the discussion was broken off, I am now as much pleased that every obstacle to its renewal is so happily removed. The "amende honorable," which appeared in the last Register, is entirely satisfactory to me, and, I presume, to all parties. Which of us has sinned most, I also cheerfully leave to a candid public as the umpire. But even if the balance sheet shows the greatest amount against my opponent, justice requires me to say, that he has, most amply and handsomely atoned for the whole. I only regret, that my plain and rustic habits have become so confirmed, that I should only bring upon myself ridicule, were I to attempt an apology in the polite style, which seems so familiar to him. But if I fail in matters of etiquette, I must remind him of the expressive adage—"to sin is human—to forgive, divine."

With these remarks, I do respectfully propose a renewal of the discussion: and this I do, not in the spirit of banter or vaunting, but simply that we may elicit the truth on this interesting subject. If I am wrong, I can truly say, that I wish to know it, and, if *convinced*, I pledge myself to avow it. As, however, I still regard myself as the challenged party, I must adhere to the privilege of dictating the terms on which the contest is to be conducted. I propose therefore that all that has been already settled, that relating to the "beans," to the Göttingen farmer's crop of wormwood, to old tobacco lots, &c. be all left out of view. And this I propose, not because I am unwilling to meet them again, but simply because they have been already so fully and fairly met, that a renewed agitation of them would be regarded as a useless and offensive repetition. And that the whole subject may at once come before us, I will here state that I wish the discussion to be confined to a *fertile* soil. In *such* a soil, then, I would respectfully ask—

1st. What special benefits are expected to result from varying the crops?

2d. Are these benefits to the soil, or to the crops, or to both? And

Lastly—How do these benefits manifest themselves in either case?

I will merely add, that since the commencement of this discussion, my attention has been more than usually awake to every thing that had a bearing upon this subject. I have therefore felt myself greatly strengthened in my previous opinions, by two articles which have come under my notice. The first is from the pen of an interesting writer, who subscribes himself "William Partridge." Now, who this Mr. Partridge is, I candidly confess, I know not. But I have fre-

quently seen his writings, especially in the Culivator; and from these, it is evident that he is a scholar of no ordinary rank. Mr. Partridge, then, (See Cultivator, number for October, 1842, page 159,) expresses himself in the following forcible manner: "It is but a short time since chemistry has been applied, practically, to agriculture, yet every day developes something new. I think it will ere long be found, that instead of a succession of crops, the raising of one product on the same land, *in perpetuo*, will be found far more beneficial. To do this, it will only be necessary to apply to the soil those materials which every plant requires for its constituent principles, and these may be developed by a correct analyzer." This is the opinion of one of our best writers on chemical agriculture, and with him I do most cordially agree. I have also seen the same sentiment expressed in a different form, by some other eminent writer, but who it is I cannot at present call to mind. But the sentiment is this:—that the best manure for any plant is that which is furnished by itself. Thus wheat straw is the very best manure for growing wheat, and corn stalks for growing corn, and the prunings of the vine for the growing vine. It is certain that nature makes use of this very kind of manure, and of this alone, for sustaining her crops. The gigantic oak, which sends forth its boughs till they pierce the sky, is nourished by the leaves which fall from itself. In fact, I see not how the advocate for some peculiar ingredients in the soil can sustain himself on any other principle.

But perhaps it may be said, that this is merely the theory of some *book farmer* and scholar, and that it wants the force of the man of practice. Happily for me, I have also such an example at hand. Mr. Weaver, of Rockbridge county, (see Farmers' Register, number for September last, page 412,) is represented by some spirited writer signing himself "Ploughboy," as one of the very best farmers in that flourishing section of country. Actual results are detailed by this writer, which incontestably show that Mr. Weaver, in the great and essential points of improving his lands, and at the same time deriving from them large and constantly increasing returns, is one of our very best practical farmers. This writer says, "Mr. Weaver does not object to taking several crops of corn or wheat from the same land, *provided it is rich.*" This quotation, taken in connection with the former one, embodies in a remarkable degree my whole theory on the subject of rotations. If the soil be only *fertile*, I have only to open my eyes, to see that corn will succeed corn, and wheat will succeed wheat; and the same may be said of most other crops. If the second crops be inferior to the first, or the third be inferior to the second, I can very readily account for it, from the fact that there has been a proportioned diminution of the fertility of the soil. Wherever the fertility remains the same, as is the case on rich alluvion, or where the fertility has been increased by applications of enriching manures, the succeeding crops, as faithful tests, will show the fact. When, therefore, I see a crop fail, I do not ascribe it to a demand for a rotation, but to a demand for increased fertility. Nor in this can I be mistaken; for an application of manure *never fails to cure the evil.*

But I am anticipating my subject. I merely throw out these hints to pave the way for a discussion, if Mr. Peyton thinks proper to accede to my propasal. J. H. TURNER.

"BOKHARA CLOVER."—SOILING.

From the Albany Cultivator.

We have a letter from Jas. Gowen, esq., of Mount Airy, near Philadelphia, in relation to an article in our last, headed "Another humbug exploded," from which we copy the following:

With its public introduction I know only this, that early in the summer of 1841, Mr. Buist, a practical horticulturist of Philadelphia, sent to a meeting of "The Philadelphia Society for promoting Agriculture," a few plants, which he called "Bokhara clover;" on sight of which, I pronounced it to be identical with what I had a small patch of in my garden, by the name of "sweet scented, flowering clover," the seed of which I received from a friend who had procured it in New-York. On my return from the meeting to Mount Airy, I compared one of the plants exhibited with those growing in the garden, and found them precisely the same. This neither increased nor diminished my zeal for the increase of the so called "Bokhara" or "sweet scented clover." Already I had what might be called a clever patch, considering the few seeds I began with, and was determined to persevere till I could seed an acre, so as to be able to feed it in such quantity as would put its merits fairly to the test. The seeds were given to me as those of a flowering plant of exquisite perfume, and in view of this character they were sown; but when grown, its leaves so resembled the lucerne, and its taste so highly clover lavored, I thought its proper place was the field rather than the garden: to which it shall be transferred next spring, to be made up in fresh boquets for Dairy Maid and her companions, who, though they may indulge in a toss of their heads, will never, I'll warrant, turn up their noses at them.

Soiling, through the summer, is a favorite practice with me—I might add, a necessary one. My farm, about 100 acres, is of light soil, on one of the highest ridges in the highlands of the county of Philadelphia. To turn out some 30 to 40 head of cattle to pasture in the summer on these uplands, under our burning suns, would be to consume all the grass in these months, leaving none for hay—to keep the fields bare to summer's heat and winter's cold—thereby injuring the soil and diminishing the supply of grass for the next season, to say nothing of the comfort of the cattle under such exposure, gathering up a withered herbage from a scorched surface. These evils, I obviate by soiling—keeping my cattle comfortable and in good condition upon some 4 acres of land under lucerne, rye, and red clover; allowing me to save more than one hundred tons of good hay, and affording the best heap of manure from stable alone since May last, from the same number of cattle, that can be met with any where. But I did not set out to write a chapter on soiling; the noticing it at all was merely incidental to showing how natural it is for me to take an interest in every thing likely to increase my means in carrying out the practice—and there is no grass or plant I

have yet seen, that affords to me such promise as the "sweet scented" or "Bokara clover," which, should it come up to my expectations, shall be made public for the benefit of agriculturists. If I be disappointed, I shall have no cause to complain, as I can console myself with having deserved success, and that the failure involved only a small share of attention to a few grains of seed presented to me by a friend, and that I never encouraged any one to lose time or money on its culture. But if it prove to be as valuable as I expect, it will matter but little whether the plant is indigenous or exotic—whether it luxuriates on the fertile plains of Bokhara, or in the cultivated gardens of New-York.

NEW METHOD OF GRAFTING APPLE TREES.

From the Connecticut Farmers' Gazette.

Plant the seed in rows at a suitable distance from each other, and the hills say about five feet apart in each row. But one tree should be suffered to grow in a place. Now when the young tree is sufficiently grown, in the spring of the second or third year, any quality of fruit may be grafted into it in the following manner: First, bend the tree over and obtain for it a firm resting place, either on a block or a board resting on the knee, (after it has been divested of its branches) and with a stout sharp-pointed knife, pierce holes directly through the centre of the tree, about five inches apart, into which the scions are to be introduced—leaving above, two or three buds. A trench is then to be dug, in a direct line between the trees, about four inches deep, and the whole tree bent down and buried, leaving the tops of the scions above ground. In this new condition, the scions become uniformly thrifty young trees, supported and nourished from the buried tree, from which issue, in due time, roots from its entire length. The second year from this operation, the whole parent tree may be dug up, the new growth sawed apart, and transplanted. It will thus be seen that if the tree is five feet in height, ten or twelve young trees, of whatever quality is chosen, may be obtained in this way, whereas by the ordinary method of grafting, there could be but one, provided the graft lived. The young scion will bear fruit, thus transplanted, in the same time it would had it been grafted into a tree fifteen years old.

I know not whether this process is new among your agricultural community at the north; but I have repeatedly witnessed it in Georgia and Alabama, and I have been informed by some of the best horticulturists in those states, that it is always successful. Yours, respectfully,

HENRY LEE.

The foregoing communication of Dr. Lee, deserves the attention of every farmer and gardener. —*Ed. Far. Gaz.*

TO KILL WEEDS.

From Loudon's Gardeners' Chronicle.

Is there any manure that will kill *weeds?* is a question not unfrequently put. Will nitrate of soda, or nitrate of ammonia, or guano, or urates? That such questions should be asked proves one thing at least, that there is a general desire to know how to extirpate weeds. We wish we could add that they also indicate some acquaintance with the rudiments at least of vegetable physiology.

Weeds, like other plants, have each their peculiar constitution, prefer certain kinds of food, and perish on the application of others. We have seen a pound of nitrate of soda administered to a sea-kale plant without visible effect; half an ounce would probably destroy a rhododendron. Common stable manure is prejudicial to coniferous plants, and in over-doses will kill them; an oak feeds greedily upon it. So it is with weeds. Excessive doses of salt will destroy all ordinary vegetation, weeds included, but promote the growth of asparagus in a most remarkable degree, thus proving itself to be a poison to one plant and a nutritious food to another. But salt cannot be used in large doses to extirpate weeds generally, because some, like the asparagus, may flourish under its action, and most crops will certainly be destroyed by it. Professor Henslow succeeded in destroying moss and weeds on gravel walks, by means of corrosive sublimate, green vitriol, and blue vitriol, especially the last. But corrosive sublimate destroys every living form of vegetation, as well as the weeds; and the two sorts of vitriol have no permanent action, encouraging the subsequent growth of many sorts of plants, and so promoting the vegetation of weeds rather than destroying it.

In practice, these chemical agents can only be employed for the destruction of weeds in certain special cases, such as the asparagus, which thrives under doses of salt, which kill most other plants; or as tobacco, which feeds greedily upon quantities of nitrate of soda, which would destroy any ordinary vegetation. In general, we must look to other means for ridding ourselves of troublesome weeds, and we shall find those means in *industry* and *common sense*. The two separate are good things, but they are better mixed together. The plain and obvious rule is to pull weeds up as fast as they appear, and while still in the state of seedlings. Then every plant that is removed is effectually destroyed, and leaves no young ones behind it. Any boy, at half-a-crown a week, can be taught to distinguish them; and if the plan is persevered in, there will very soon be nothing for the boy to do. Strict attention must, however, be paid to their thorough extirpation when young; it will not do to pull up *almost* all, and to leave the remainder to seed; for in that case the labor has to be all gone over again.

FENCES.

[Our views, in opposition to the dishonest principle and baneful operation of the law of enclosures in Virginia, have been presented to the public so often and so fruitlessly, some years ago, that we have since thought it useless to urge further, in this respect, the vain defence of private rights and general interests. Our "last words," however, on this subject, are embodied in a report to the Board of Agriculture, on the "Obstacles to agricultural improvement caused by govermental regulation," and which we had designed to print

in the Farmers' Register, before the close of this volume, and the end of our connexion with the publication, but which now must necessarily be excluded, for want of room.

In the following article will be seen views on this same subject, and estimates of loss thereby incurred, from Pennsylvania. But there the law of enclosure, bad as this writer shows its operation to be, is not half so costly as the law of Virginia would be there. In Pennsylvania, as we understand, and in most if not all other states north of Virginia, hogs are not permitted by law to go at large, and therefore the fences are not required to exclude hogs, and therefore they need not have more than half as many rails, or to cost more than half the money. If the law of Virginia was in force in Pennsylvania, the following estimate of the cost of fencing would have to be increased 100 per cent.; or if in Virginia there was introduced merely the partial relief which the law of Pennsylvania would afford, the present enormous cost of fences might be reduced one half.—Ed. F. R.]

From the Philadelphia Public Ledger.

One of the greatest differences between the United States and any civilized country of Europe, which an agricultural traveller would discover in passing over both, is in the *fences*. In Europe, nothing is fenced but the pasture. In the United States, every thing is fenced but the pasture. In the former, every proprietor of cattle fences them against trespass on his neighbors. In the latter, every proprietor of crops fences them against the cattle of every body. In the former, he may pass over extensive regions of growing crops, without seeing a single fence upon the road, or a single animal at liberty in it. In the latter he could not find a mile of highway without fences on both sides, and scarcely travel a mile without meeting cattle at large.

Which custom is the best? The question is easily decided by a calculation of the cost. Every American farmer will say that fencing is his greatest agricultural expense, and that he incurs this expense because fencing is his first agricultural want. He will say that a farm without a fence is like a house without a chimney, or a ship without masts and a rudder, a thing utterly useless, because incapable of being used. Therefore in buying an old farm, his first inquiry is about the fences; and in buying a new one, his first care is to fence it. A western farmer, who buys new land, will say that he must *clear* and *fence* before he can raise a crop. All that is wrong. Instead of fencing crops, the farmer should fence cattle; he should build fences merely to confine cattle, instead of building fences every where to confine every thing against cattle. Let us suppose a farm extending a mile upon each side of a highway, and half a mile at right angles to the highway upon each side, and containing fifty acres of pasture in one body. This farm contains a square mile, or six hundred and forty acres. According to the American system, each half of this farm would be surrounded by a fence, and almost every portion within their enclosures would be fenced excepting the pasture. Thus the mowing grounds would be fenced, the corn-fields would be fenced, the wheat fields would be fenced, every thing would be fenced but the pasture; and upon a moderate computation, this farm would contain ten miles of fence. Thus two miles would bound the highway, two more parallel with these, would divide it from the adjacent land and the half mile at each end, on each side of the highway, would amount to two miles more, the whole being six miles; and the fencing of fields within this outside fence against neighbors and the highway, would amount to four miles. Ten miles contain 3,200 rods; and estimating the first cost of this fence at two dollars for the rod, we shall find a first cost of $6,400! The interest of this at six per cent. is only $384!! And if the annual expense of keeping this fence in perpetual repair be only twelve cents and a half per rod, though we believe it would be much more, the annual tax upon this farm for fencing, besides the interest on the capital sunk, would be $400! Therefore the whole annual expense of this fencing is $784!!

Now let us examine the European system. Under this, all fencing would be dispensed with excepting that for the pasture; and if this, containing fifty acres, be ten acres in length by five in breadth, it would require 480 or 360 rods of fence. An acre contains 160 square rods, or a space 20 rods in length and 8 rods in breadth. Then if this field were 200 rods in length and forty in breadth, or 100 in length and 80 in breadth, it would in either case, contain an area of 8000 rods, or 50 acres. Any other combination of length and breadth upon fifty acres would give a length of fence approximating to one or the other of these numbers. But assuming the highest number 480 rods, we find a first cost for fencing the pasture of $960, an annual interest upon it of $57.60, and an annual tax for repairs, of $60, and a whole annual tax of $117.60. The reader will perceive some difference in capital sunk between $6400 and 960; and in annual tax between $784 and 117.60! The capital saved at first is only $5440; and the capital saved from annual tax in ten years, without any estimate of annual interest on the savings is only $6664! Such is the difference between fencing cattle *out* of a corn-field, and fencing them *in* a pasture! But this is not all the difference. At compound interest of six per cent., a capital is doubled in about twelve years. Then if two farmers begin, each with a square mile of land equally divided by a highway, and each containing fifty acres of pasture, both under equal cultivation but without fences, and one farmer adopt the American, and the other the European system of fencing, what will be the difference between them at the end of twelve years? Let us calculate. The American begins with fencing his farm completely, upon an expenditure of $6400, and keeps this fence in repair at an annual expenditure of $400. At the end of twelve years, he possesses a well fenced farm, which has cost him $12,800 in capital sunk for fences, and $4800 in annual repairs, and $1817 in interest on these repairs; the aggregate being $19,417! The European begins

with fencing his pasture, upon an expenditure of $960, and keeps this fence in repair at an annual expense of $60. We will also suppose that as both begin with a floating capital of $6400, the European puts the residue from the cost of his fence, or $5440, at compound interest. At the end of twelve years, the European has a farm with a well fenced pasture, which has cost $1920 in capital sunk, and $720 in annual repairs, and $294 in interest on these repairs; the aggregate being $2934. The difference between these aggregates is only $16,483!! Therefore, at the end of the twelve years, the American has a good farm and nothing else, and the European has a farm equally good, in other words equally productive with the same labor and culture, and $16,483 cash at interest! Yet these two men started together with precisely the same means, and all this difference is produced by different systems in fencing. Whoever will make, or read and understand the calculation, will perceive that fencing cattle *in* is much cheaper than fencing them *out*.

We commend this subject to the farmers of the great agricultural state of Pennsylvania. The evil of this erroneous system is an enormous tax upon agriculture, and the remedy is in their own hands. By enacting and enforcing severe laws for the confinement cattle, they will relieve themselves from a heavy burden. We shall hereafter offer a word upon the same subject to railroad corporations.

ACCOUNT OF THE OPERATION OF M'CORMICK'S VIRGINIA REAPER.

To the Editor of the Farmers' Register.

Chericoke, November 17th, 1842.

When you were at my house during the past spring, I mentioned expecting to have in operation, during the then approaching harvest, a new reaping machine invented and patented by a Mr. McCormick, of Rockbridge county, in this state. You were pleased to request that I would furnish you, for publication in the Farmers' Register, the result of the operation of the machine. In regard to my promise, as well as in justice to the worthy inventor, it ought to have been complied with sooner; but circumstances, unnecessary now to refer to, have hitherto prevented me. But I hope it may not still be too late to afford any gentleman who may be so disposed time to send on his order for a machine for the next harvest.

The machines were received in due time for the then approaching harvest, and with them came the elder Mr. McCormick, the father of the patentee, to set them up and put them in operation, whom I found to be a worthy, intelligent old gentleman. As soon as the first machine was put together, we started it in a wet, damp day, in very heavy wheat, not yet ripe, but having the rust so badly as totally precluded the hope of its being of any value, or indeed that it would make any further progress in ripening. Mr. McCormick not seeming to fear, or have any doubt but that the machine would work in it, two mules were hitched, and, to my astonishment, under all the unfavorable existing circumstances, it operated without stoppage or difficulty, leaving the stubble as even, and the ground clean, not a straw standing or lying, as a parlor floor.

This wheat was of the kind you saw growing at my house, called the rock wheat, which I dare say would be the most productive wheat I ever saw, if it would mature well in our climate; but I fear from the stoutness of the straw, and quantity of fodder, it will not. As soon after as the weather permitted, and the wheat was ripe enough, the machines were put to work, and although then, from the repeated winds and rains which had fallen, we had no wheat that stood erect, and none that was not badly rusted, still they worked beautifully and without hindrance, saving the oft repeated rains—coming up fully I think to Mr. McCormick's advertisement, going over fully as much ground as stated by him, from 15 to 20 acres per day, and doing the work as neatly as it could be done. During the first days of harvest we had each day quite a troop of horsemen of the neighboring farmers following the reaper, all expressing their admiration and entire satisfaction at its performance. Among them were many cautious and judicious men, not easily led astray by novelties or humbugs, and one or two very good machinists. And one gentleman, who, you know, never gave in readily to new notions, the late Conrade Webb, esq., said it was the only thing of the kind he had ever seen which, instead of falling short of, exceeded his expectations. I cannot say with precision, as compared with cradles, how many it will take the place of; but this fact I know, that with 25 hands, counting the driver and raker, I could not secure in shocks much over half the wheat it cut in my rankest growth of straw. But that I think was greatly owing to the straw having become so rotten, that after the dew was off we could not bind with the wheat, and had to substitute willow bark to bind with. I think it a great labor-saving machine; but its greatest beauty is the neatness and clean manner in which the grain is saved, saving in good or heavy wheat, I am satisfied, more than a bushel of wheat to the acre more than can be saved by the cradle.

Having never seen one of Hussey's machines, I am unable to draw a comparison between them; but from what I have heard respecting it, should think this of McCormick's was constructed upon a different principle, and one more simple than the other, and I should suppose not liable to the same objections, as although it may not cut wheat as well wet with a heavy dew or rain, as indeed it does not, as when perfectly dry, still it operates, even under those circumstances, very well. Indeed I have seen J. A. Selden, esq. during this fall, and he told me he had two of Hussey's machines, but could not work them at all last harvest, on account of wet, which I suppose proves conclusively the superiority of McCormick's, as I cut all my crop with perfect ease and despatch.

From the manner in which it cut some patches of clover, herd's grass and timothy, it met with among the wheat, I am satisfied it may be adapted well for mowing purposes, and such is my conviction of the fact, that I have ordered one to be constructed for the purpose. The only localities in which I should suppose McCormick's reaper would not operate well, would be on Arator's narrow sharp-top beds, and in very rocky or stumpy land; in such situations the cradle would

have to be resorted to; but on hill-sides, or in crossing the ordinary 10 or 11 feet bed, I found no difficulty.

Upon the whole I think the agricultural public greatly indebted to Mr. McCormick for the talent and perseverance he has displayed in originating and perfecting the Virginia reaper, as in a few years I am satisfied it will, wherever circumstances admit, entirely supersede the cradle, and farmers will wonder how they could have gotten on before its invention. As it has not appeared in the Farmer's Register, I will first append a certificate I gave the elder Mr. McCormick, when he left my house, (who remarked at the time, that unless I was perfectly satisfied that the reaper had come up to the advertisement, he did not wish to be paid for them.)

"*Certificate.*—I have had three of Mr. C. H. McCormick's reapers at work this harvest, under my immediate observation; one on the farm on which I reside, and two others on farms under my management, and take pleasure in stating that the operation of all has been fully equal to my expectations, and indeed rather exceeded it, as indeed that of all others who witnessed the operation of the machine. Mr. McCormick's advertisement is fully sustained. It will certainly cut from 15 to 20 acres per day, if well attended to, and leave not a straw that can be brought in contact with the cutter. It has been worked this harvest under every disadvantage which it was possible almost to bring to bear against it, in consequence of the unprecedented wet weather we have had. It will cut any wheat that it is not too low for the reel and teeth to reach. It does not appear to me to be as liable to get out of order as a common cradle, and I should think it would be very durable. The reaper has cut all descriptions of wheat—green, ripe, rusted as badly as wheat could have it, lying and standing; and I have no hesitation in saying, that I believe it one of the most important agricultural improvements of the day; and, I think, that every farmer cutting fifty acres of decent wheat, would find it to his advantage to have one. No weather has prevented the reaper from working, except when the ground was so soft as to mire the wheels."

I am, respectfully, yours,
CORBIN BRAXTON.

June 28th, 1842.

EDITORIAL NOTICES TO SUBSCRIBERS.

The undersigned has the gratification of announcing to the friends and supporters of the Farmers' Register, that the property in and direction of that publication will be transferred, at the close of this year and of the current volume, to Thomas S. Pleasants, who will thereafter be the editor and publisher. To those persons who know this gentleman intimately, any recommendation would be superfluous. To others, and to the agricultural public in general, the undersigned begs leave to say, that Mr. Pleasants is well qualified, by the acquisition of general and varied information, and by extensive reading and sufficient practical experience in agriculture, and also as an excellent writer, to conduct an agricultural periodical of a high grade of character. The undersigned trusts that his present subscribers and the friends of the work will continue their support to the Farmers' Register under the editorial charge of his successor; whose abilities are likely to be as useful in discharge of that duty, and his editorial services and efforts more acceptable to the public in general, than have been those by which the publication has been recently conducted.

EDMUND RUFFIN,
Editor of Farmers' Register.

Petersburg, Va., Nov. 7, 1842.

The much larger portion of all the remainder of this volume, even with an extension of the number of extra pages allowed for the new edition of the 'Essay on Calcareous Manures,' will necessarily be taken up by that publication; all the essential portion of which will thus be given in (or as a supplement to) the current volume of the Farmers' Register. Should some other sheets of the Appendix to the Essay, of connected but not essential matters, be still excluded from this volume, they will be printed afterwards, and forwarded without charge to all the present and continuing subscribers who shall have paid their present dues before the close of this year.

The necessity for thus giving up so much of the remainder of the Farmers' Register to the 'Essay' will not cause the lessening of the usual amount of new and original matter; of which, as it will be seen, the portion of that work which accompanies this number, principally consists; and of such matter as, it is hoped, will not be unacceptable to its readers. This arrangement however will necessarily cause the postponing to the beginning of the next volume of the Farmers' Register, sundry communications, and especially those of greatest length, which it would be very gratifying to the editor to usher himself to the public. However, this necessary delay of these and of any subsequent communications will enable his successor to commence his editorial career with more *eclat*, as well as with more of usefulness and gratification to the supporters of his labors.

Of those indebted subscribers who may see this notice, and whose payments are in arrear merely because of inattention, it is earnestly requested

that they will remit their dues without more delay. If this be not done before the end of the current volume, the accounts will be necessarily transferred to other hands, and a large discount, even from the debts of the most responsible debtors, will necessarily be lost by the present creditor. The amount due from each indebted subscriber now on the list, was stated on the cover of No. 7. of the current volume.

ADDRESS OF WILLIAM C. RIVES,

President of the Agricultural Society of Albemarle, at their Annual Fair, on the 29th October, 1842. Printed by order of the Society.

Gentlemen of the Agricultural Society of Albemarle: This is the first occasion, since you did me the honor to make me your president, that I have had an opportunity of returning you my acknowledgments for so distinguished a proof of your confidence and regard. I feel how little of ability I have to advance, in an effective manner, the noble objects of our association; but whatever powers or faculties of good I possess shall be faithfully and zealously devoted to your service. The sense of my incompetency to fill the measure of your expectations is deeply enhanced, when I recollect who they were that have occupied this place before me—men, "who have held the scale of empire, ruled the storm of mighty war," and having served their country in its highest and most difficult stations, have given the serene evening of their days to the glorious task of redeeming and elevating its agriculture.* Of these illustrious citizens, my immediate and honored predecessor has, since our last annual meeting, closed his long and distinguished career of public usefulness. While his state and the nation at large mourn his loss, we cannot but feel it, in an especial manner, on an occasion like the present, when his imposing and animating figure was wont to mingle among us, and to impart fresh zeal to our common pursuits.

Every great undertaking of public utility seems destined to alternate periods of depression and revival. Ours, I trust, after a temporary relaxation of the interest felt in it, owing, probably, to the occupation of the public mind with more exciting, but certainly not more useful subjects, is now, it is to be hoped, on the eve of a revival, which will endue it with new energies, and carry it forward, with accelerated velocity, in the path of its usefulness. It seems impossible to question the high utility of such associations, when conducted with a right spirit. They stimulate the progress of improvement by the potent influence of mutual example, and the generous ardour of an awakened emulation. The mind, as well as the heart of man, is sociable, and seeks companionship and communion with other minds. We are told in a book of revered authority, that "iron sharpeneth iron—so a man sharpeneth the countenance of his friend." This social principle is the modern lever of Archimedes in all enterprises of public good, from making a railroad or canal, to christianizing a world. There is no country in which it has been so extensively and efficiently employed, for general purposes, as in our own. This characteristic feature of American society was remarked upon, with his accustomed discrimination and judgment, by a learned and distinguished foreigner who visited us a few years ago, and who, tracing its existence to the popular character of our institutions, affirmed, as a general philosophical truth, "that in *Democratic* countries, the science of association is the mother of science; the progress of all the rest depends on the progress it has made.*

If this be true as to the general objects of human science and improvement, how emphatically true is it in regard to that great interest with which we are specially connected. As cultivators of the soil, we live in a state of isolation and dispersion on our respective farms. While the members of other professions and callings are congregated in towns and cities, or are frequently brought together in the exercise of their professional duties, the farmer treads the daily paths of industry in the majestic solitude of Nature, relying, each one by himself, upon his own unaided judgment in the conduct of his daily toil. By the happy expedient of association, like the present, we are brought up periodically from the solitude of our daily pursuits, each one bringing with him as a contribution to the general fund of skill and knowledge, the results of his own separate experience and observation, to be thrown into a common stock for the benefit of all—for, in regard to every species of useful knowledge, *community of goods* is now, thanks to the spirit of the age, the established law of the social, and more especially of the agricultural world. The more experienced and successful of our brethren, too, bring with them, to the annual competitions of skill and improvement instituted by these associations, specimens of the choicest productions of their industry and care, animal, vegetable, and mechanical, while the helpmeets whom Heaven in its bounty has bestowed upon us, ever ready to assist in every good and useful work, grace the department of the exhibition which belongs to them, with the finer, but not less essential fabrics of their cunning household arts. Who can doubt the efficacy of institutions such as these to incite, stimulate and aid us in running the noble race of industry and improvement which Providence has set before us?

If any such there be, let him cast his recollection back to the appearance and condition of our farms some twenty-five years ago, when this society was established, and compare them as they were then with what they are now. Though we all feel there is abundant room still for improvement, yet so great is the progress which has been already effected, that the *identity* of certain farms which I could name has been almost literally lost in the change. Take, for example, Penpark, in this immediate vicinity, the farm of our worthy brother, Mr. Craven, one of the earliest, as well as most successful pioneers in this beneficent march of improvement, or Moorsbrook, the residence of another of our wor-

* Mr. Madison and Gov. Barbour were successively presidents of the Agricultural Society of Albemarle.

* De Tocqueville.

thy colleagues, Mr. Charles Meriwether, a more youthful but not less zealous votary of the cause of rural improvement, and who that knew them, as I recollect them, in their ruined, exhausted, and dilapidated condition, twenty-five years ago, would recognize them as the same places now, except by their unchanged *geographical* position? The wand of the magician, set in motion by this society, has passed over them, and in the place of the desolate nakedness of *red galls and gullies*, or that still more dreary type of poverty and neglect, the *broom-straw wilderness*, have succeeded the golden abundance of the rich and waving wheat field, or the bright verdure of hills clad in luxuriant clover and green-sward. Similar and equal, if not greater, changes have taken place upon many other farms within the sphere of this society, which could be named; and while their exterior aspect has been thus magically transformed, it would not be risking too much to say, that within the same period, their actual marketable productions have been, at least, tripled. If any should be inclined to set down these results to the credit of the general spirit of improvement, which has more or less pervaded the country at large, within some years past, rather than to any influence exerted by this society, I shall be pardoned for referring them, in no invidious sense, to the marked and acknowledged difference in the progress of agricultural improvement between this and adjoining counties possessing similar natural advantages, but not hitherto profiting, in an equal degree, of the stimulants and aids derived from associations like ours.

While the success of the past supplies us with abundant motives for perseverance, the prospects of the future afford a yet stronger incentive to increased exertion and zeal. Agriculture, as a science, may be said to be as yet in its infancy. The researches of learned and inquisitive men, within the last ten or fifteen years, have thrown a new light upon some of the most important processes of Nature, concerned in the rearing and bringing to maturity the productions of the earth. *Organic* chemistry, which has done so much lately towards revealing and explaining those processes, has almost wholly had its origin, as a distinct branch of science, within that period. Every rational system of agriculture must be bottomed on a knowledge and application of these principles. In what manner plants carry on their nutrition and growth—what substances contribute to their nourishment and support, and in what form enter into their constitution,—by what organization they appropriate and assimilate their food—the structure and functions of their different organs,—the sources from which their supplies of food are mainly derived, whether from the earth or from the air,—the composition, ingredients, and influence of the soils in which they grow,—the chemical action of the various manures employed to promote their growth—all these are matters of which the agriculturist should possess a sound and correct knowledge, if he would practise his profession with intelligence and success. The elementary principles of these inquiries, he derives from the chemist, the vegetable physiologist, the mineralogist, the geologist;—but much remains to be done by his own enlightened and discriminating observation. The farmer, indeed, is the fellow-laborer of the man of science in prosecuting his researches into all the arcana of the vegetable economy. His true character is that of an *experimental* philosopher, whose operations in the vast laboratory of Nature are the indispensable complement of those performed in the laboratory of the chemist.

Here, then, is a new and important field for the usefulness of agricultural societies. It is under their encouragement and supervision that a well-digested series of accurate and skilful experiments can be most advantageously instituted and conducted, to aid in the advancement of agricultural science, and to test the theories on which some of the most essential problems of practical agriculture depend. The importance of this desideratum has been long felt by men of science. Sir Humphry Davy, in his well known lectures on agricultural chemistry, remarks, "that nothing is more wanting in agriculture than *experiments*, in which all the circumstances are *minutely and scientifically* detailed, and that this art will advance, in proportion as it *becomes exact* in its methods." In this most useful branch of human knowledge, we may freely and without reproach indulge the passion of the day for *mesmerising*. We may commune with Nature in her sleep, interrogate her on her mysterious laws, elicit the secrets of her most hidden processes, and turn the revelations thus obtained to the highest practical benefit of our species. I will take the liberty, on another occasion, of inviting the attention of the society to some suggestions in detail for extending our usefulness, in this respect.

May we not hope that the professors of science, in return for such services as we may be enabled to render to the cause of liberal knowledge by our experimental operations in testing and illustrating its principles, will cheerfully come forward, from time to time to aid and enlighten us by their theoretical and philosophical views of the phenomena of Nature, and of the true methods of investigation and improvement. It is, I am sure, only necessary to make the appeal, to have it promptly and zealously responded to. Nothing has more strikingly distinguished the utilitarian age in which we live, than the honorable anxiety of men of science to apply the results of their researches and discoveries to the practical purposes of life, and thus, in their day and generation, to add to the amount of *actual, positive* good in the world. To all who are animated with this noble spirit, there can be no higher encouragement and reward, than to find the active classes of society appreciating, at their just value, the aids which science is capable of affording to their industrious pursuits. The late accounts from England bring us information of Liebig, the great German chemist, whose recent work on organic chemistry marks a new and prominent era in the history of science, mingling with the farmers of Yorkshire, at their cattle shows and agricultural meetings, and expounding his theories in familiar popular addresses. The distinguished geologists of that country, Buckland, Murchison, De la Beche, it is well known, have zealously complied with the calls made upon them, by undertaking gratuitously, geological surveys of the soils and subsoils of extensive agricultural districts. In our own country, the labors of Professors Hitchcock, Dana, Jackson, and others, attest the same sedulous and faithful attention, on the part of men of science in repub-

lican America, to the interests of practical agriculture; and I need not, I am sure, go beyond the limits of our own society for a distinguished example of a like public spirit in a learned professor, whose labors are so well known to us.*

It is the province of associations like ours, gentlemen, to invite and bring forth the contributions of men of science to the cause of practical improvement. The great work of Leibig, to which I have just referred, was prepared at the special instance of the British Association for the advancement of Science. The lectures of Sir Humphry Davy on Agricultural Chemistry, which gave the first marked impetus to the applications of science to agriculture, were delivered at the request, and in the presence of the Board of Agriculture of England. A mere *county* agricultural association in England, resembling in every respect our own, has recently had the good fortune of bringing forth by its encouragement and intervention, a work of extraordinary merit, which, for the popular and intelligible form in which its instructions are conveyed, as well as for the body of sound science it contains, is probably destined to replace all its predecessors. I refer to the lectures of Professor Johnson "on Agricultural Chemistry and Geology;" the first part of which only has yet appeared, but which affords the promise of a *code* of instruction, when completed, of the highest value to the practical agriculturist. These admirable lectures were delivered before the *Durham County Agricultural Society*, and the *members of the Durham Farmers' Club*, in a style of explanation so lucid and comprehensible, as to call for no previous technical knowledge of the subjects of which they treat. Here is an example worthy of imitation. We have already shown our sense of the intimate and important connexion between the objects of our society and the investigations of science, by making the learned professors of our University, ex officio, honorary members of this association. Shall we not invite them, from time to time, to bring the lights of their several departments of science, through the medium of popular lectures, to direct and illuminate the paths of our agricultural labors, and to sustain and embellish, by the efforts of their genius, the chief pillar in the edifice of our national prosperity and grandeur? Shall we not lay public spirited men of science every where under contribution in the same holy cause? I shall venture to propose this to you, gentlemen, in the firm confidence that an appeal to the patriotism of American science can never be made in vain.

By the means here suggested, the usefulness of our society may be greatly enlarged, and much may be done by its instrumentality for the interests of agriculture. But yet, other measures of a wider scope are demanded by those interests. A public endowment, under the patronage of the state, for instruction in the principles and practice of agriculture, is imperatively due to that great class of the community, which is immediately connected with the cultivation of the earth. We have, in great number, schools of law, schools of medicine, schools of general literature, but none of agriculture. Why is this so? The recent census shows, that the number of persons engaged in agriculture, is four times greater than the whole number of persons employed in commerce, manufactures, the learned professions, and trades of every description, all put together. Does not every consideration of policy and justice, then, require the provision of some means of professional education, in an art, to which so predominant and vital a portion of the industry and worth of the country is devoted. Is agriculture alone to be degraded into a vulgar and empirical pursuit, which requires no liberal instruction? On the contrary, there is no other profession, I will venture to affim, which demands, for its intelligent exercise, so wide a range of scientific knowledge. It embraces within its scope, by a direct and necessary dependence, the domain of chemistry, botany, vegetable physiology, geology, mineralogy, meteorology, zoology, mechanical philosophy, not to speak of the moral and political sciences which have so important a bearing, in many respects, upon some of its highest interests. To which of the *learned* professions, so called, I would ask, is so large a group of kindred sciences associated in such close and intimate relationship?

These considerations are making themselves daily more and more felt, and are arousing public attention, in every enlightened community, to the just claims of agricultural education. A professorship of agriculture has been long since established in the universities of Edinburgh and Dublin; and from the former has recently proceeded one of the most valuable works on the "Elements of Practical Agriculture" ever published. If distinct professorships of agriculture have not yet been founded in the English universities, arrangements are in progress for establishing them; and in the mean time lectures of distinguished ability have been delivered on the subject by some of their learned professors—among which it would be inexcusable not to mention particularly the lectures of Professor Daubeny of the University of Oxford. It is time that Virginia should acquit herself of the debt which every enlightened and especially every republican commonwealth owes to this great primordial interest of society. We must have a professorship of agriculture in our University as a part of the general course of liberal studies, to furnish our young men, when they quit its walls, with a competent knowledge of the principles of a profession which so many of them embrace in after life. In addition to this, there should be established in connexion with the University a *special agricultural institute*, designed for those who might not wish or find it convenient to follow the general course of University studies, but whose object would be to acquire in shorter time or at less expense, the professional education of an instructed agriculturist, as well as the general accomplishments of an intelligent and useful citizen. In this department, theory and practice should go hand in hand; and for that purpose, a model and experimental farm should be attached to the institute, to be conducted under the most skilful supervision and management, and to afford examples of the most improved methods of culture and fertilization.

Of such an institution, a perfect exemplar, tested by forty years of successful experience, is presented to us, in the admirable and celebrated establishment of Von Fellenberg, at Hofwyl, in Switzerland. I am spared the necessity of details in the development of this suggestion, by simply

* Professor Rogers.

referring to that well known establishment as a general model, admitting readily of modifications, where a difference of circumstances may be supposed to require them. It was my good fortune, during my residence in Europe, to visit this classic spot; and I can safely say, that I saw nothing in the palaces of kings, in the museums of the fine arts, in the gorgeous displays of wealth and power, on every hand, which impressed me with half the admiration I felt in contemplating the modest, but noble establishment of the Swiss republican patriot and sage. Agriculture he chose as the basis of his enterprise—and by the happy combination, in the training of his pupils, of intellectual and bodily labor, mutually relieving and giving zest to each other, he has achieved those prodigies of moral and physical improvement, which have drawn upon his institution the earnest attention and applause of the civilized world. It has furnished to continental Europe the best models of its agriculture, while it has sent forth into its various states and kingdoms some of their most useful, virtuous, and enlightened citizens. At the same time, the model farm of Hofwyl stands a proud refutation of all the stereotyped satires, so frequently indulged, on scientific farming, as the accounts of the establishment, kept with minute mercantile exactness, disclose, through a series of years, a net profit of eight and a half per cent. upon the whole capital employed—a rate of profit with which, I venture to say, any of us *practical* farmers would be more than content.

I have thought it not unsuitable to the present occasion, gentlemen, to present to you these observations on the means of extending the usefulness of our society, of elevating the standard of our profession, and of promoting the progress of agricultural science, in which the highest prosperity of the state, as well as our own personal interests and feelings, is so deeply concerned. If I shall have thrown out any thing which shall appear to you worthy of being further pursued, I shall esteem myself happy in awakening the interest of those, whose intelligent exertions, concurring with those of our agricultural brethren elsewhere, must ensure by their united moral influence, success to whatever object of public good they may espouse.

Pass we now from these topics to those of a more familiar character connected with *operative* agriculture. The bountiful Author of our being, gentlemen, has given to man dominion over the earth; and over all its productions, but coupled with the grant the express condition and injunction, that he should *subdue* it by his industry and toil. It is no part of the scheme of Divine Providence, that spontaneous nature should supply the wants of man. On the contrary, there is hardly any thing which nature presents to us in a state which supersedes the necessity of human labor to make some change in it, to prepare it for the use of man. Political economists, indeed, tell us that *labor* is the *only* source of the necessaries and conveniences of life, or what they call *wealth*. Whatever exception may be taken to this proposition, in its unqualified strictness, it is, nevertheless, undeniable that human labor is, by far, the most important constituent in almost all articles consumed by man—even the ordinary products of the earth. The great philosopher, Locke, remarks, that "if we will rightly consider things as they come to *our use*, and cast up the several expenses about them, what is purely owing to *nature*, and what to *labor*, we shall find that, in most of them, *ninety-nine hundredths* are wholly to be put to the account of *labor*." And he adds, that "it would be a strange catalogue of things that the industry of man provided and made use of, *about every loaf of bread*, before it came to our use, if we could trace them."* Let us not repine at this law of our being, but recognize in it a new proof of the goodness and wisdom of Divine Providence, which thus supplies us with constant motives to that active exertion of our faculties, mental and bodily, in which only the true dignity and happiness of man are to be found.

The earth, then, is given to us in a state unfit and incompetent for the support of civilized man, but with varied and indefinite capacities of production, to be drawn forth by human industry and art. There is no part of its primitive surface which does not stand in need of *improvement*, in some form or other, by *artificial* means. This is the fundamental principle of agriculture as an art, and points to a constantly progressive improvement as the end of every generous system of farming. No man should be content simply to preserve his lands in the condition in which they are. The poor should be made rich, and the rich richer; and such is the efficacy of artificial means of improvement, that what was originally the poorest land in Europe, (I refer to the light sandy soils of Flanders,) is now propably the richest—so that Flemish husbandry has become synonymous with the perfection of fertility and productiveness. In effecting this extraordinary triumph over the disadvantages of Nature, much doubtless has been done by good tillage, deep ploughing, thorough draining, and a judicious rotation of crops; but the most efficient agent has been the minute care in collecting and preserving, and unwearied diligence in the application, of *manures*. These, indeed, in connexion with proper culture, are the "charms and mighty magic" by which the wonder-working power of agricultural improvement has every where wrought its miracles. It is alike curious and encouraging to observe how the catalogue of these precious resources is daily extending by the discoveries of modern science, and the inquisitive spirit of the human mind. In addition to the numerous class of vegetable and animal manures, so long known, and whose virtues have been tested by centuries of experience, it is now discovered that the respective compounds of lime and magnesia in *bones*, and the peculiar chemical affinities of *charcoal powder* and *soot*, have placed them high on the list of valuable fertilizers.

But it is chiefly in the wide field of mineral manures, and in the bowels of the earth, that the researches of the chemist and the geologist are from time to time unfolding new resources for stimulating and increasing the productiveness of its surface. —I need not bring to your view any of these modern discoveries, of which you will obtain a far more satisfactory knowledge from the publications which treat of them. But I cannot pass without

* See Treatise of Civil Government, b. ii., chap. v., s. 40 and 43.

noticing the extraordinary and cheering results, which have already followed, and are likely to be still farther produced, in a portion of our own state, by the use, as a manure, of those beds *of fossil shells*, which are found deposited, in such large abundance, throughout the tide-water region, and to which the denomination of *marl* is now generally applied. And here we have occasion to remark a striking example of that wise economy of Providenne to which I have already referred. The region in which these large deposites of marl are found is distinguished, for the most part, by natural soils of an inferior fertility; but beneath their surface Nature has placed, in liberal measure, the means of enriching them to any extent, thus inviting the enterprise and industry of man to their improvement. It was the fortune of a public spirited and intelligent Virginian, at a critical moment for his country, to perceive the inestimable value of this hidden talent; and, under the awakening influence of his able writings and experimental demonstrations, lower Virginia is now undergoing one of the most remarkable transformations of this age of improvement. I need not say that I speak of the able author of the "Essay on Calcareous Manures"—a work that has already taken a distinguished place among the agricultural classics of the English language, and which will transmit the name of its author to future times as a public benefactor.

You are not unmindful, gentlemen, that Nature has placed on either side of us, in the region we occupy, one of the most efficient of this family of calcareous manures. I refer to the vein of limestone which borders us on the east, running parallel with, and at about a mile's distance from the base of the South-west mountains, and the broader field of it which skirts us on the west, running along the western base of the Blue Ridge mountains. These bodies of limestone run in parallel directions through the entire width of the state, and at about an average distance of twenty-five miles from each other. It becomes, therefore, a matter of interest to the whole range of counties lying in this situation, and not inappropriately called the *Piedmont* counties of Virginia, to enquire how far we may profitably avail ourselves of this material, which Nature has placed on either hand of us, for the improvement of our lands. It strikes one at first with some surprise, that lime having been advantageously employed from the earliest times as a manure, doubts should still exsit, in various localities, as to the benefits of its application. But when it is recollected that it belongs to the class of what are called *special* manures, adapted to particular soils, and even on the soils to which it is adapted, requiring to be used in different quantities, according to the condition of the land to which it is applied, this spirit of caution is not an unreasonable one.

Being somewhat of a pioneer in the lime husbandry in this portion of the state, I feel myself called on, gentlemen, to give you the results of my experience. I have used about 12,000 bushels of it, (slaked measure,) from a quarry opened for the purpose on my own land, which has been spread over about 150 acres, at an average, therefore, of 80 bushels to the acre. Some accounts which I had read of its effects elsewhere, not expressed with the accuracy and discrimination so much to be desired in such communications, had led me to expect a decided effect from it upon the *growing* crop—by which I mean the crop, of either corn or wheat, immediately succeeding the application of the lime. In this, I was disappointed; but the discrepancy is probably accounted for by the fact, that I have not hitherto used lime in combination with putrescent manures from the farm yard or the stable, while others have most probably done so, though that circumstance was not noted in the communications to which I refer. My first disappointment, however, in regard to the effects on the growing crop, was more than compensated by the marked, unequivocal, and decided effect I have never failed to perceive from the lime *alone* in the *clover* succeeding the wheat crop—with which it has been my general practice to apply the lime at the time of seeding, harrowing in the lime and wheat at one and the same operation. The increased luxuriance of the clover has furnished, of course, conclusive evidence of the improvement of the land, from the application of the lime, and has, in its turn, enured to the still further amelioration of the soil. All my observations, in regard to lime, would lead me to the opinion, that it is the most *permanent* of all manures, and to concur in the conclusion, so forcibly stated by Dr. James Anderson, one of the most copious and able of all the British writers on agriculture, who, in his most valuable "Essay on Lime," says, "*that its effects on the soil will be felt, perhaps, as long as the soil exists*"—and this conclusion he justifies by the mode of its action, altering the nature and constitution of the soil itself, and enduing it with capacities and affinities which it never before possessed. My applications of lime have been almost entirely on a close, gravelly loam, of a brownish or gray color—and the result of a single experiment, on land of a different description, would lead me to believe, that it is not adapted to the red ferruginous clay soils of the sides and base of our Southwest mountains. It is a proverb in England and Scotland, that,

> "He that marls sand
> Will soon buy land:
> But he that marls clay
> Throws all away."

The reason that Dr. Anderson suggests for the comparative inefficiency of marl on clay soils is, that clay forms a large proportion of marl, and the addition of clay to clay, therefore, cannot be expected to produce so good an effect. The same reasoning would furnish a solution of the supposed want of adaptation of lime to the red clay soils of the Southwest mountains *proper*, and of its unquestionable efficacy on the adjacent gray loams, as a chemical analysis of the two soils has, I understand, disclosed the existence already of two per cent. of lime in the former, and of hardly any sensible quantity whatever in the latter.

Nothing can be more certain, than the highly beneficial effects of lime, as a manure, on a large majority of our soils, in which, according to an analysis by Mr. Ruffin, of as many as sixteen different specimens taken from various and distant parts of the state, lime is very rarely ever found as an original and natural ingredient. The important practical question then is, whether the expense of the application is justified by the benefits of the manure? This is a question which every person must determine for himself, accord-

ing to his particular position, and his own views of profit and loss. For myself, I will only say, that I have always found the best application I could make, of money derived from the land, was to return it back to the land, in the shape of improvement. There is no investment of capital which can be more safe, and in ninety-nine out of a hundred cases, none half so profitable. If by laying out five dollars in manure, on an acre of land, you make it produce you twenty bushels of wheat, worth a dollar a bushel, when it produced but five bushels before, and this product is renewed to you every four years, in an ordinary rotation of crops, have you not secured an interest of one hundred per cent. on the outlay you have made, and, at the same time, increased the value of your land four hundred per cent.? And yet results such as these, extravagant as they may seem, and though we may be unconscious of them ourselves, are often achieved by a liberal and spirited system of improvement. The *passion* of us Virginia farmers is to acquire more land—not to make the land we already possess more productive. If a farmer should add yearly to his possessions a hundred acres of land, he would doubtless consider himself getting along very prosperously in the world. But if at no greater expense he can make a hundred acres of land twice or thrice as productive as they were before, is he not doing much better, with the great advantage of having a more compact surface on which to concentrate his labor and care.

The misfortune of our Virginia agriculture is, that we have already too much land for the labor we can bring to cultivate it. As we are not likely to make a voluntary curtailment of the extent of our farms, the greatest practical reform that can be introduced into their management is to curtail the arable surface on each, and to lay down a larger portion of our lands to grass. Instead of wasting the energies of our soil by annually spreading over a wide surface a superficial, negligent, and teazing cultivation, yielding comparatively nothing, how much better would it be to cultivate one-half or one-third of the space we now do, to concentrate upon that all our resources of labor and improvement, and to leave the rest to recruit itself by the healing processes of Nature. Liebig has explained in a very ingenious and philosophical manner the process by which lands laid down to grass are constantly renewing and improving themselves, and has thus confirmed the deductions of our own observation by the demonstrations of science. Should any one doubt whether we should derive from the reduced surface, better cultivated, a product equal to that of the whole under inadequate culture, let him recollect the instructive story told by old Columella, in his *De re rustica*, of a Roman vine-dresser who had a vineyard and two daughters. When his eldest daughter was married, he gave her a third of the vineyard for a portion, and yet he had the same quantity of fruit as before; when his second daughter was married, he gave her the half of what remained, and still the produce of his vineyard was undiminished. This anecdote of the Roman agriculturists, gentlemen, points the full force of its moral against that fatal mania for emigration which has hitherto carried off so large and valuable a portion of our population to seek wider domains for themselves and their families in the prairies of the west. It is not more land that we need. We have enough and more than enough already, if properly cultivated and improved, for ourselves and our children after us. It is industry, improvement, good husbandry we want, to develope the natural capabilities of our soil, and to make it adequate to every reasonable wish, and even to the fondest dreams of prosperity and wealth. With these, seconding the gifts of Providence by which we are surrounded, we shall have nothing to envy to the untamed abundance of the west, tempting us from the cherished scenes of our childhood, and the hallowed tombs of our ancestors. I am happy to believe, gentlemen, that a brighter day is now dawning upon us, and that the eminent natural advantages and superior capabilities of Virginia are beginning to be appreciated at their true worth, by the citizens of our sister states, as well as to be more and more felt by her own children. While emigration from our borders has, in a great measure, ceased, other states are beginning, in their turn, to send to us tributes of their moral, industrious, and enterprising population, attracted hither by the advantages of our climate, our numerous navigable rivers, our water power, our mineral resources, our favorable geographical position, our kind and improvable soils. Of these welcome swarms from kindred hives, I have recently become acquainted with one of so interesting a character, embracing persons of great respectability, from one of the oldest and most highly improved counties in the state of New York, (the county of Dutchess,) that I cannot deny myself the gratification of reading to you a letter I have recently received from an intelligent citizen of the county of Fairfax, in answer to some inquiries I addressed to him, giving me the particulars of their settlement and establishment in that county.

(Here Mr. Rives read the letter referred to, as follows:)

I proceed to make the following answers to your inquiries:

How many citizens of New York have purchased land in your county?

Ans. From the best information I can obtain, there are about fifty-six families that have purchased land, some of which have not removed, but the greater part of them now reside in the county; these families average from three to five persons, making about two hundred persons in all.

How much land in all have they purchased?

Ans. Thirteen thousand five hundred and thirty two acres. They have very generally preferred small sized farms, from one hundred and fifty to two hundred acres, but they have been compelled to purchase large farms, or rather large tracts of land, which they are cutting up as fast as they can.

Have they been sufficiently long established to indicate what their system of farming may be?

Answer.—I do not think they have. But their system, so far as I have observed it, is in favor of the cultivation of grass, over that of grain, and thus far, they have made rapid improvements in the appearance of their farms, if nothing else. They remark, that if clover will grow well, they are satisfied they can make the land rich.

Have they used lime, and with what effect?

Answer.—I do not think they have used lime

to any extent, so as to know what its effects will be.

What appears to be the prospect of a farther accession of settlers from that quarter?

Answer. The prospect seems to be very good. I have no doubt from the information I have obtained, that they will continue to come amongst us. They seem to be delighted with the climate, and generally pleased with our people, and I know of no one who has settled here who is desirous to return to the north. There is now a strong disposition, amongst the wealthy farmers of Dutchess county (the richest county in the state) to purchase lands and remove to this county. Much might be done by our legislators to promote this emigration, so important to our impoverished and wilderness state; but I forbear to enter upon this topic at the present."

This agricultural immigration into our state from New York marks a new and cheering era in the history and fortunes of Virginia. It has all taken place within two or three years past, and consists of some of the most intelligent, worthy and substantial farmers of one of the most improved and fertile districts of the north. It is impossible to prize too highly such an accession of industry, capital and intelligence to our agricultural community, or to estimate the full extent of the good effects, direct and consequential, which it may bring in its train. What an emphatic homage is it, gentlemen, to the superior natural advantages of our state, which have hitherto been too much slighted and neglected by ourselves. It is but the beginning of the influx of enterprise, skill and wealth which will flow in upon us from other states, while we retain in contentment and happiness our own native population, *if* by improved systems of husbandry we do *our* part in developing and demonstrating the capabilities and productive powers of our soil, under the hand of persevering and enlightened culture. What a field of usefulness to our country is here opened to us all! It is a race of noble emulation in which we may all contend for the prize of true patriotism. It is an oft-quoted saying of a celebrated writer, "that whoever makes two ears of corn, or two blades of grass, to grow where only one grew before, deserves better of mankind, and performs more essential service to his country than the whole race of politicians put together." How much is the merit and the magnitude of this service increased, when at the same time by the example of his fruitful labors he attaches, with new and indissoluble ties, his children and his neighbors to the land of their birth, and brings a dozen useful citizens into the state, where aforetime a dozen useful citizens were accustomed to leave it. Every man who performs his part in such a work, however obscure his destiny in other respects, or noiseless his path of life, is a public benefactor, and a patriot. The humblest laborer in such a cause,

——"Serves his country, recompenses well
The state beneath the shadow of whose vine
He sits secure, and in the scale of life
Holds no ignoble, if a slighted place.
The man whose virtues are more felt than seen,
Must drop indeed the hope of noisy praise;
But he may boast what few that win it can,
That if his country stand not by his skill,
At least his follies have not wrought her fall."

THE MEDITERRANEAN WHEAT.

For the Farmers' Register.

In a communication which I made to the Farmers' Register, which appeared in the number for February, I mentioned that I had procured some wheat from Pennsylvania, called there the Mediterranean, which was said to resist the Hessian fly. I have since learnt that it was brought to this country by Commodore Jacob Jones. After it had been grown in Delaware, some of it was sent by Doctor Nandine, of Wilmington, to Virginia, where it is called fly proof. Last year, about the 10th of October, I sowed ten bushels on two and a half acres, from which I gathered fifty-six. As no part of my crop was injured by the fly, from my experience, I can say nothing of its fly proof quality; but it ripened one week earlier than my other wheat, and escaped the rust, by which my general crop was diminished one-half in quantity. I have this year sown forty-four bushels, on twenty-two acres; and should I live to gather my crop, and the Register then be in life, (which I sincerely hope,) I will give you an account of it. Since the first appearance of the Hessian fly, on the Eastern Shore of Maryland, no wheat has been found to be proof against it; and our crops are often much injured by the rust. If experience shall prove this wheat to be exempt from both, it will be of great value to the country.

I heard from a gentleman of this county, that the Baltimore millers placed a low estimate upon the Mediterranean wheat, and was desirous to ascertain its real value. I had two bushels ground at a neighborhood mill; I directed the miller to weigh the wheat and the fine flour. He informed me that they weighed 120 pounds; and, after deducting one-eighth for toll, produced 69 pounds of fine flour. It made good bread, in the estimation of my family; and, as a further test, I sent a specimen to a lady in Talbot, and another in this county, both of them well experienced in these matters, who concurred in our opinion that the bread was good, but inferior to what is made from our white wheat.

In a former number of the Register you stated that you would be pleased to receive any uncommon fossils found in our marl banks. More than twenty-five years ago, in ditching some low ground, I found a large tooth, which was given to Mr. Haden, a dentist in Baltimore, who pronounced it to be the tooth of an Asiatic elephant. Since, when near the spot, I found in a marl bank two others corresponding with the first. One of them I have presented to the Baltimore museum; the superintendent says it belonged to the American mastodon. The other I still have, it weighs 12 pounds; and, if you desire to have it, I will have it put on board of any vessel you shall name, trading between Petersburg and Baltimore.

If the Register shall terminate at the end of the year, this will close my correspondence, and I avail myself of this occasion to express the pleasure and instruction I have received from the Register, and the regret I feel at its cessation.

WM. CARMICHAEL.

Wye, Q. A. Co., E. S. Md.,
Nov. 16th, 1842.

[The gift offered by Mr. Carmichael will be accepted with pleasure. It may be sent (securely

covered) by the freight steamer from Baltimore. We trust, from the arrangements announced, that our correspondent will not lose what he has so much valued in the Farmers' Register; nor the publication lose the aid of his communications, which have heretofore given to the work much of its value.—Ed.]

HEMP CULTURE FOR NORTH CAROLINA.

To the Editor of the Farmers' Register.

Big Lick, Roanoke, Nov. 18th, 1842.

A cultivator of drained swamp land, in Washington county, North Carolina, desires to know whether hemp would be a crop suitable for his situation, as to soil and climate, and you appeal to your subscribers for the information.

As I am a hemp grower to some extent, and have taken a good deal of trouble to acquire all the information I could with regard to its culture and subsequent management, I will endeavor to satisfy your correspondent's inquiry.

The favorite soil of hemp is a deep, rich, dry, friable mould, neither liable to drown in wet, nor bake in dry weather. It is necessary that ground intended for hemp should have the most thorough preparation. It must be free from grass and trash and clods, and as perfectly pulverized as a garden bed. This will give all the seed an equal chance of vegetating. The plants will grow off together, and the crop will have that degree of thickness which is requisite to a great yield and a due degree of fineness in the stalk and lint. If the land is indifferently prepared, rough or foul, the seed in favorable spots will vegetate before the rest, and the growth is so rapid that they immediately shade the ground and so enfeeble the tardier plants that they never attain the height of the general crop. The consequence is, a thin crop, coarse stalks, harsh and indifferent lint, and a poor yield. From this your correspondent will be able to form a pretty correct notion of the adaptation of his soil. If his swamp land is thoroughly drained, there can be no question of its suitableness, from what I have understood of its texture. I learned from an agricultural tour made by yourself a few years since, that almost the whole of the peninsula between Albemarle and Pamlico Sounds, embracing several counties and an area of several thousand square miles, is exceedingly rich and productive when reclaimed. On the estate of an old college classmate, which you examined most minutely, you found a general surface soil of rich vegetable mould two and a half feet thick, with a close substratum of blue clay, which sub-soil, when brought to the surface and exposed to the atmosphere, crumbled readily, and was by no means deficient in fertility. Such a soil certainly possesses all the important constituents of a hemp soil, and I can only conceive of two circumstances which can possibly interfere with its successful culture. These are, the difficulty of keeping the reclaimed marsh perfectly dry, and the southern climate. As to the first, there is a most encouraging instance in my immediate neighborhood of successful cultivation on a reclaimed swamp, which is so deficient in compactness and solidity, that jumping with a man's weight on the surface will make the earth tremble for a circumference of fifty or sixty feet.

As to the second impediment, of climate, there may be something in it, as hemp has never been adopted as a *crop* in countries as far south as Carolina, while it has been uniformly the favorite staple of the extreme north. In those portions of our western country corresponding in latitude with Washington county, in North Carolina, the farmers have small patches of hemp, apparently as flourishing as the growth of more rigorous latitudes. The lint of the colder countries is said to be better. This, for aught I know, may be true; but I believe it is purely speculative, founded on conjecture, where there were no facts to build on. I have had frequent opportunities of examining the crops of upper Missouri and northern Kentucky, and I am fully satisfied that our crops in Roanoke are fully equal in every respect to either of them. *Here*, we are about two degrees south of the portion of Missouri alluded to, and the same number of degrees north of Albemarle Sound. Our altitude will enhance the difference in going towards the Atlantic; but if two degrees makes no sensible difference between Missouri and Roanoke, I would hardly think that two more degrees, even with a slight addition for altitude, could make any very material odds.

If you should receive nothing more satisfactory from other sources, and should think what is here contained of any interest to your correspondent, you are welcome to publish it.

Respectfully yours,

W. M. Peyton.

REPORT TO THE STATE BOARD OF AGRICULTURE OF VIRGINIA,

In reply to their inquiry as to the "*Obstacles to improvement, including the operation of the laws, or governmental regulation.*"*

By Edmund Ruffin.

It is not designed in this report to consider all the important obstacles to agricultural improvement in Virginia; but only a few of the most operative and injurious, and of which the existence and oppression are due entirely to the legislative policy of this commonwealth, and which may be removed, or greatly alleviated, easily, certainly, and most beneficially to agricultural and general interests, by legislative action.

The evils of this kind which most injuriously affect agricultural interests, and oppose agricultural improvement, are produced by the defects of

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* As the length of this report made it inconvenient and improper to insert it entire in the few remaining and unappropriated pages of this volume, it was designed to omit it entirely, as was intimated in a previous page. But as there are different subjects treated of, under distinct heads, it has been determined to give an extract, which embraces a portion of these subjects, leaving the other and larger part of the report to be continued, in the first number of the new series of the Farmers' Register.—Ed. F. R.

the legal policy of Virginia in regard to, 1st, fencing, and trespasses of live-stock on crops—2d, the drainage of extensive swamps, or lands of sundry proprietors subject to inundation by one common stream—and 3d, the existenee of mill-ponds injurious to health.

The pecuniary losses to the commonwealth produced continually by each one of these obstacles to improvement are enormous. But, in addition, the two latter evils annually produce injuries to the health, to the lives, and to the happiness of many thousands of persons, which cannot be estimated in money values, and which greatly exceed all possible extent of the pecuniary sacrifice. But, if dismissing from consideration and estimate these higher and far more precious interests, and having regard merely to the money value of the cost and of the products of the erroneous existing policy of Virginia in these three things only, the balance of annual loss thereby sustained, (after making full allowance for all gains from the system,) if correctly estimated, would amount to as much as a very large proportion of all the real agricultural profits derived from other and truly productive and valuable sources.

Neither is it the purpose of the writer to go fully into the discussion of even these three subjects, or to attempt to exhibit all the force of their operation as obstacles to agricultural improvement, and destroyers of agricultural profits. To embrace even the important details, would require the subjects to be treated at such length as would be unsuitable upon this occasion. In such general and cursory manner as is deemed suitable and requisite, the three subjects will now be treated in the order stated above.

I. The legal policy of Virginia in regard to enclosures, and trespasses.

Justice and policy have concurred in fixing as a general principle in the laws of civilized nations, that *each individual should be compelled to refrain from trespassing injuriously on the property, or otherwise doing wrong, either directly, or through others under his control, to any other person under the protection of the laws.* In Virginia, however, there is one most important exception to the general adoption of this principle. The whole land of our country is, in effect, deprived of this protection against trespassers and wrong-doers. Our law does not forbid A to permit his cattle to eat and destroy the growing or ripe crops of B; but compels B to secure his fields effectually against the entrance of the cattle, or otherwise maintains A as innocent. In this case the rule just named is reversed; and so far as our fields and crops are in question, the principle adopted is this: *each individual shall guard and protect his property from depredators, and every person is permitted to consume or destroy all that may not be well guarded.*

The injustice of this reversed rule would be readily admitted by any one who considered the question abstracted from the circumstances from which our policy sprang, or who was not in some degree blinded by being accustomed and reconciled to the practical operation of this policy. But I am no advocate for aiming at theoretical perfection in government, or consulting arithmetic and geometry, rather than the actual condition of men, to make rules for their direction. I freely admit that, at a former time, circumstances in Virginia required the general adoption of this policy—and that it is still expedient over a large portion of her territory. But in another large portion of the state, from changes of circumstances, this policy has become as injurious in its practical operation, as it is unjust in theory.

When our country was newly settled, the extent of cultivated land was very small compared to the forests and waste land, much of which, even in that state, was valuable for pasturage; and it was by far cheaper to fence in a few and small spots of arable land than the extensive woodland pastures, or *range* for stock; and the range was much too valuable to be abandoned. It was beneficial to every landholder that such should be the general plan of enclosures, although the open land thereby became one large common pasture, for the use of him who owned but little, or none of it, as much as for those who owned the largest shares. According to these views our legal policy with respect to enclosures was fixed; and from it all derived at first some benefit, though certainly the benefits were very unequally divided. The law, stated generally, requires that each owner of a field shall surround it with a good fence, of a certain height, or shall have no remedy against the intrusion of his neighbors' live stock.

But now the state of things in much the greater part of eastern Virginia is altogether changed. All the fertile land has long been cleared and made arable, and much more of such as is extremely poor is also under tillage. In districts where the soil is, or has been, of good quality, very little timber for fencing remains; and, consequently, the expense of fencing is increased greatly more than in proportion to the increased extent of enclosures. The remaining wood-land is poor, and so worthless for pasturage or *range* for stock of any kind, that many of the owners make no use of their unenclosed wood-land for that purpose. But this abandoning the use of their woodland (which in fact is not worth using by any one,) does not relieve the owner of the expense of fencing his arable land; and this is required merely that other persons may not be deprived of the use of his wood-land for range, which he does not consider worth using as such for his own live stock.

The great extent of fencing required bears especially hard on the tide-water region. There, on and near good lands, the original growths of durable pine and good oak have all been destroyed—and a choice has been already, or soon will be presented to every farmer, either to purchase suitable fencing timber at a distance, or to use the *old field* pines which form the second growth of his worn fields, and which are not more remarkable for their rapid growth, than for their rapidity in rotting, when used for fencing timber. There are no durable materials for dead fences, and the frequent divisions of lands, as well as the laws permitting stock of every kind to range at large, forbid or discourage the attempt to make live hedges. There are many farms which have five miles of perishable fences to keep in repair, that do not yield $500 of clear profit; and many other tracts are thrown out of cultivation, and yield nothing to their owners, (who in most cases are the especial *favorites* of our laws—widows or orphans—) because the expenses of lawful fencing would exceed the whole rent.

Under this system and these circumstances, farmers who make suitable enclosed pastures for their own live stock, (as every one ought to do for his own interest,) are burdened with the expense of two kinds of fencing, for two different objects. His own interest requires that he should make an enclosure to keep his own cattle *in*, and the law compels him to fence his cultivated lands, to keep the cattle of other people *out*.

It is impossible to estimate with any approach to accuracy the heavy loss caused to the farmers of eastern Virginia, by this unjust policy. But if each person will calculate the amount of his own individual loss, it will be sufficiently evident that the whole annual amount is enormous.

It is admitted that the evil of this policy is not so rated by all who bear even its heaviest burdens. There are many, who because they have never known any different state of things, can scarcely conceive the advantage of making every man restrain his own cattle within his own bounds. Therefore, even if the legislature were impressed with the opinions here advocated, it would be improper to make any general or sudden change in our system. Most of the benefits of a change might be secured, and the objections avoided, by partial changes of the law of enclosures. for such particular districts as would accept the offer by the voices of three-fourths of their proprietors, and they owning not less than three-fourths of the land within the boundaries of each district. If such a privilege was accepted by the owners of a district of five miles square, for example, they would still be bound to maintain at their joint expense a general enclosure in obedience to the general law, and to exclude the cattle of all persons residing without their limits. But the expense of such general enclosing fence would be very inconsiderable, and would be diminished to each individual in proportion to its greater extent. Such a plan would secure to every considerable tract of country either kind of policy that its inhabitants were decidedly in favor of—and would be free from every reasonable objection. If the people of any one neighborhood were permitted to adopt the change proposed, under proper restrictions, all the risk and loss of the trial would be confined to them, and if it succeeded, the whole community would participate in the benefit.

If our legal policy in this respect was altogether changed, there are many farmers who would still refuse to profit by the boon; and, from their fondness for close grazing their fields by as many cattle as can be kept alive through the year, would keep up their present amount of fencing, though their fields would be no longer liable to the depredations of any cattle but their own. But most persons would soon learn the benefit of pursuing a different course. Each farmer having to maintain his own cattle, would keep a smaller number, and confine them generally to a permanent pasture well enclosed: and by being necessarily reduced to one-fourth of their present numbers, and treated as well as the change of system would permit, the live stock would yield more products of every kind than at present. The lands kept for tillage, thrice as extensive as the enclosed pastures, if too poor to be grazed, might be safely left without a fence, until their improvement in after time may make enclosures necessary for the owner's interest. There can be no doubt, if permitted to get rid of the burden of making and repairing three fourths of our costly and perishable fences, that the change would be almost necessarily followed by greatly improved products from both live stock and tillage, as well as increased fertility to the whole country exempted from the usual impoverishing and unprofitable grazing of poor fields by poor cattle.

It is utterly impossible to approach an estimate of the annual cost and dead loss to agriculture caused by the construction and repairs of the proportion of fences which are totally useless to the owners' interests, and required by nothing but the penalties of the law of enclosures. If such an estimate could be correctly made, the amount exhibited would display a degree of voluntary sacrifice of wealth by the agricultural interest, without even any proportional gain to other interests, which would astonish both the imposers and sufferers of the burden. But, without pretending to any thing like accurate valuation, it can scarcely be doubted that in the eastern part of Virginia, the cost of useless fences to each farmer, on the general average, is fully twice as much as the amount of all the taxes he pays directly to the treasury of the commonwealth.

But if the change of the law of enclosures, to the extent required by justice and by the interests of agriculture, be hopeless—even to be introduced slowly and gradually and cautiously as proposed above, and only when, and to such extent as demanded by the majority of proprietors and for the greater share of the land of each particular district—still there is a partial but important alleviation of the burden of the present law, which might be permitted at once, and with scarcely any serious inconvenience to any interest or individual, even among those now unjustly favored by the law. This improvement would be made in merely restraining hogs from ranging at large; or to deprive that kind of stock alone of the protection (or freedom of trespassing) afforded by the general law. If that change only were made, it would lessen the whole cost of fencing by one half. A good "post and rail" fence, of three rails in height, on a ditch or bank, would be an abundant protection against cattle; and if that kind of fence would serve, the best and most durable fencing timber could be used, and such fences would be cheaper than the worst now made. But the legal requisition now existing for excluding hogs, (and even those of the smallest size,) forbids such improvement and economy in fencing, and makes necessary the close-laid rails, and 12 or 13 to each pannel, of the ordinary perishable worm fences.*

* An enterprising and intelligent New Jersey man, when on a first visit to Virginia, was induced by the very low price to buy a large farm in one of the lower counties, which he has since cultivated judiciously and profitably. He was not acquainted with, and had not thought of the provisions of the fence law of this state, until he found himself subjected to the burden. He afterwards declared that he would cheerfully pay as much more as the actual purchase money of his estate, if by so doing he could obtain for it the partial benefit of the New Jersey fence law, which differs from ours only in forbidding hogs to run at large. His estimate of what he lost by the difference was probably not

The only condition necessary for the introduction of this one amendment of the law, is a measure which nearly every good farmer of a district generally under culture, has already adopted, and which every one ought to adopt, even if having regard merely to his own interest as a feeder and fattener of hogs. This measure is to forbid his hogs ranging at large in the woods, or on waste and unenclosed lands; and to feed them in sties, and by grazing on his clover fields. There are few farmers in eastern Virginia who have not already learned that they can make no profit by keeping hogs on "woods range." In ordinary times there is so little food to be there obtained, that the corn necessary to be furnished to the hogs is more than they are worth when finally brought, half-starved or half-wild, to the pen to be fattened. And, in their then usual lean state, they will still consume as much food, before being fit for slaughter, as would nearly or quite serve to buy as much pork in market. And when there is a good crop of acorns, which is an occurrence too irregular and uncertain to be relied on, the then abundant supply causes the ranging hogs to go astray, and often become wild, so that a large proportion fall a prey to hog stealers or hog hunters—whose gratification, more than that of any others, is promoted by a "good acorn season." The writer was fully convinced long ago, by his own previous experience, that no profit or benefit was to be derived from such sources ordinarily; and though then possessing some hundreds of acres of low-lying tide-marsh and poor wood-land without his enclosure, his hogs were withdrawn from both twenty years ago, and have since had no benefit whatever from his own or other persons' waste lands. Yet, merely that other persons may enjoy the benefit of letting a few half starved and totally unprofitable hogs range upon the lands which the owner thus abandoned as worthless for this purpose, he (under the general law of the land) would have not only to yield the full use of such land to his neighbors' stock, but also to incur an expense of fencing twenty-fold as great as the profit of all the stock so ranging, to prevent them from encroaching further, and getting upon the cultivated crops. This, the former and still the general state of things, has indeed been beneficially altered in this particular case by several circumstances, and especially by the late amendment of the law, which makes certain tide-waters and other navigable waters lawful fences. The manifest benefits which have already accrued to a large portion of the agricultural community from this partial departure from the general principle of the law of enclosures, ought alone to be enough to induce the further extension of such relief.

II. *Drainage of swamps.*

The legislative policy of Virginia does not *permit* the drainage of extensive swamps, if the stream passes necessarily through several or many different properties. There is indeed no direct or designed prohibition on the statute book; but nevertheless the indirect prohibition is as effective as if expressed positively, and the restriction made valid by heavy penalties. A small swamp, or wet bottom, confined to one property, and having therein the facilities for sufficient descent and discharge for the surplus water when collected by ditches, needs nothing for its being perfectly drained and properly cultivated, but the individual proprietor's will, intelligence and industry. And, with all existing deficiencies of their proprietors, most of such lands have already been, or soon will be, drained and put under grass or grain crops. So far the silence of the law can do no harm, and nothing is required of its action. But for the greater part, the drainage of such lands requires the agreement and co-operation of several, and, in some cases, of many individuals; and the want of either the will or the ability by any one proprietor operates as a complete bar to the procedure of all. The greater the extent of the swamp, (as on Blackwater and Chickahominy rivers, and many other long and swampy streams,) and the greater the nuisance its continuance forms to public as well as private interests, and the greater the number of proprietors, so will be greater the impediments to (or rather the more certain the impossibility of) any combined and general action for drainage. Indeed, if all who are free-agents among the proprietors were anxious to drain, and were perfectly agreed as to the general plan of operations, yet if there were but a single orphan's property, in possession or reversion, or widow's dower or life-right, in the swamp lands, it would effectually serve to stay all procedure for the improvement; unless indeed (which can never be expected) some one or a few of the proprietors were willing to construct and maintain the whole general work of drainage, for the equal gain of others who would pay nothing towards the object. Indeed, even this excessive degree of liberality would not always remove the legal and effective obstacles to such drainage. For some one proprietor may be so stupid or perverse, or so influenced by some peculiar motive or interest, as to be opposed to the drainage in view. And such person, even if owning but a strip of ten yards width across the course for the main drain, may effectually forbid its being cut; or, still worse, may close it after its being opened and in useful operation, and thus destroy all the benefits before achieved for the lands above.* Under

too large; and his was not a case of very unusual hardship in this respect. Very many individual farmers pay more annually for the keeping up of totally useless fences, than the whole clear income of their farms.

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* This supposed case is not imaginary or unprecedented. We are well assured of the truth of the following facts. The land of a farmer, A, in lower Virginia was penetrated by an extensive flat swamp, of which the lower extremity, and natural outlet, was in the land of his neighbor B. As there was no hope that the latter would aid in it as a joint undertaking, A agreed to do the whole work of making a general main drain, at his sole expense, for the benefit of both proprietors. The work was executed, and would have operated to drain both farms, and free them from the heavy burden before imposed by the nuisance of the swamp. All that was required and expected of B was to keep open the drain, after its being thus constructed for him gratuitously, and to let his lower part of it

such circumstances it is not to be wondered at that many thousands (perhaps some hundreds of thousands) of acres of the most fertile lands in lower Virginia still remain, (and ever must remain, while the law remains unchanged,) not only utterly worthless, but a nuisance to agriculture, and a wide-spread source of annual disease and deaths. And the evil condition and effects of these swamps have been becoming worse and worse ever since the first settlement of the country, and will continue to become worse, until the proper remedy is afforded.

In their original and natural state, the waters of such streams as the Blackwater and the upper Chickahominy, &c., which form wide swamps by their obstruction and overflow, must have had much deeper channels and lower levels than latterly and now. Except the rare falling of trees by their natural death and decay, or the construction of dams by beavers, there was nothing to obstruct the passage of the streams. But since the settlement of the country, the obstructions are increased and heightened every year, and the low lands thereby are kept more and longer under the inundations, and the nuisance of the swamp in every way increased, but more especially in the injurious effects of its exhalations on health. The large trees on the margins of the streams are cut down for timber, and their tops most frequently fall into or across the bed of the sluggish stream; and these tops, catching the floating leaves and mud, soon form dams which raise the water and compel it to spread over the adjacent level ground, and to seek new passages through the swamp. Thus it may be inferred that by such repeated obstructions the surfaces of these swamp lands are now much higher than formerly, and yet the waters are still higher in comparison to the land, and more frequently serving to inundate. The trunks of fallen trees are soon covered by water, or mud; and, being kept constantly wet, do not rot for many years. The trunks of cypress trees thus covered remain unrotted for hundreds, and perhaps thousands of years.

The obvious and effectual mode of draining such swamps, is to begin at the lowest occurring obstructions, and cut a passage of suitable width and depth through them from the clear and open outlet of the main stream, through the middle of the swamp to its head, or to the highest point of the land to be drained, taking for the route the lowest, shortest, or otherwise best course to discharge the floods, and not the mere dividing lines of opposite estates. This being done, and the passage merely being kept open, (and for that it would usually be only necesary to refrain from forming new obstructions,) the stream would be generally, if not always, kept within its new channel, (and which would indeed be deepened by the passage of the water,) the land would rarely be overflowed, and the main object of the joint and general operation would have been effected. Each individual proprietor could then certainly and cheaply complete the draining of his own share of the swamp land, by opening smaller drains, and emptying them into the deep and sufficient outlet furnished by the great main drain passing through or along side of his lowest ground. And thus, it is confidently believed, there might be drained an immense body of the most fertile lands at an expense less than one-tenth of the available value of the lands when so improved—and perhaps even less than the cost of the evil now caused by the present existence of these great nuisances.

To reach this great and beneficial end, it is necessary that a law should be enacted to authorize the execution of general schemes of drainage, and to require of all proprietors (under proper safeguards and restrictions,) to contribute to the execution of works manifestly for the benefit of each one and of all. The difficulties which might appear to oppose such beneficial legislation are as nothing in comparison to the benefits to be obtained; and if the great object were really and earnestly desired, the means would be readily found.

The degree and continuance of health and the duration of healthy or useful life, have perhaps never been estimated in pecuniary value, and are not at all suited to be so estimated with any approach to accuracy. Yet it cannot be doubted, that if thus estimated, the bare pecuniary loss to the residents of lower Virginia and to the commonwealth, caused by the diseases from malaria alone, would be of enormous annual amount. I speak not of the pain and unhappiness produced—but merely of the loss of labor of the sick and the infirm from sickness, and of the prematurely dead—of the expenditures thereby incurred—of the general and pervading benumbing and enfeebling influence of malaria on mind and body—and of the very great depreciation of all values in a region regularly so afflicted. And if the cessation of wrong legislation, or the substitution of right and wise legislation, could serve to prevent even a small proportion of the prevalent diseases of lower Virginia, it would be an incalculable gain of pecuniary agricultural value to the people, and an important gain to the state treasury, from the great increase of labor and its products, and of productive agricultural capital in general.

The statements above go to show that the great object of preserving health, which our legal policy has never aimed to aid by any permanent or judicious regulations, might be greatly forwarded by the same legal measures which would permit and induce the reclaiming of the swamps. For it is not necessary to prove the universally admitted proposition, that all swamps and swampy lands are more or less productive of unhealthy exhalations or malaria, and therefore injurious to health. But this one branch of the evil, however important a subject for the remedial action of government, is far less so than the next which

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serve as an outlet for the discharge of the water from the upper part. But A had not supposed it possible that his neighbor could fail to perform this implied obligation, and took no guaranty for the performance. Subsequently, for some reason or motive unnecessary here to investigate, B closed the main ditch at his upper boundary, retaining its draining benefit for his own ground, and leaving the land of A in as bad condition as before he began his gratuitous and fruitless labors. The estate of the latter has since remained, as before, of less than half its proper value, and the residents regular sufferers from autumnal diseases.

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will now be presented for consideration, and which has been entirely created and is maintained by legislation, and which may be generally removed or greatly mitigated, to the advantage of all parties concerned, merely by different legislation. The great political sin which continues the nuisances of unhealthy swamps is one of the legislative *omission* merely. But the still greater evil, health destroying mill-ponds, which will be next presented, is a sin of legislative *commission* in all respects.

NOTES ON THE SANDY POINT ESTATE. NO. VI.

To the Editor of the Farmers' Register.

Sandy Point, Nov. 26, 1842.

In my last communication to the Register a statement was made of the quantities of wheat sown on this estate in fall of 1841. Throughout the remarkably mild winter which followed, this crop maintained a very promising appearance until the last week in March, when a succession of frosts for five or six nights caused it to assume a very yellow appearance, with the tops of the leaves of the larger proportion of it entirely killed. By the 8th of April its appearance was greatly improved; on the 10th, Hessian fly was first observed amongst the earliest sown wheat, and on portions of that sown in November on corn ground; and by the 19th, the wheat on fallow land, sown between the 1st and 10th of October, exhibited evident symptoms of injury from this pest; by the first of May the portion of the crop was reduced in consequence fully one-half. All the other portions of the crop had by this time improved most gratifyingly. And this appearance was fully and improvingly maintained throughout the residue of its growth; on the 30th of May amongst the small portion of rock wheat sown, smut was very general, as also indications of rust. I may add here that the result of the small experiment made here of this variety of wheat was a failure. On the 3d of June, spots of rust were observable throughout much of the crop; and by the 8th had extended over almost the entire breadth of white turkey wheat. Amongst the purple straw variety, its progress was much slower, though of sufficient extent to cause considerable and just alarm. One lot of 20 acres of this variety of wheat, sown after corn, having a heavy growth, was entirely ruined. This disease once in a wheat crop, no limits can be set to its fearful ravages, nor any estimate formed as to the probable result of a crop into which it has entered, until subjected to measurement. It was hoped here that as this disease did not generally attack the crop until it had been nearly matured, that the injury would have been slight, the result however was the reverse; its progress after the commencement of harvest was rapid, and it did appear to me that the grain was even injured after being shocked. Reaping was begun on the 16th and finished on the 28th of June, and proved to be a most unpropitious season for harvest operations. During the entire time occupied, only three days occurred in which rain did not fall. Rust made frightful progress, and from the difficulty in getting the wheat dried, the entire loss of a large portion of the crop was oftener than once anticipated, the labor of harvesting was greatly increased, and much time unavoidably lost. The actual time engaged in *reaping* amounted to only 6½ days out of the 13 during which harvest operations were protracted. In efforts to save the wheat, much of it was rather prematurely put into shock; the consequence was a very large proportion of these had again to be pulled down, sheaves untied, and the wheat spread out. In many instances this pulling down and re-opening had to be repeated at a heavy expense of labor and vexatious loss of time; nor was the whole considered in a safe condition until the 14th of July, during which time daily examinations had to be made and shocks pulled down. A great many of these became mouldy, straw much injured, and the grain also doubtless nothing benefited. The entire number of shocks amounted to 3942. Thrashing of the crop was begun on the 25th of July, and finished on the 9th of September; during which period much rain again fell—the cause not only of much loss of time, but of injury to the wheat from sprouting in the shock. In this respect, however, the loss sustained was much less than from the unfavorable condition of the weather, generally, there was reason to have anticipated.

From what has been stated above it is almost superfluous for me to say that the results of the entire crop were any thing but satisfactory, being under, rather than over, two-thirds of what, from the generally good growth of straw, and at one time promising appearance of the greater portion of the crop, might have been reasonably expected. Deliveries of the grain have not yet been completed, nor the exact quantities ascertained. The yield of the purple straw variety will average about eight bushels for one bushel sown; that from the white turkey little if any above four for one. Though the purple straw variety suffered much from rust, it suffered little in *comparison* to that of the white turkey, which was also the first to be so affected, though of a less dense and heavy growth, the same results have been experienced for the past two or three years. The sowing of that variety is for the present at least abandoned. Of the wheat (purple straw) sown on oat and pea fallow, side by side, on soil of equal quality, that on pea fallow yielded, as nearly as could be judged by the eye, not less than one-fourth more than that sown on the oat fallow, and was also a much plumper and heavier looking grain. On the oat fallow, in the beginning of May, nearly every plant of wheat was found to be affected by Hessian fly, while on the pea fallow scarcely any could be detected, though only divided by a furrow. Rust also prevailed more on the oat than the pea fallow, though the growth of straw was much the heaviest on the latter. I mention the *facts*, but cannot attempt to assign any reason why the one species of fallow should be affected to a greater extent, both by Hessian fly and rust, than the other. Clover was sown on portions of both these fallows on which marl had been applied previous to sowing the wheat. So far as could be observed, the seed made an equally good start on both; but, when the wheat was reaped, the stand of clover on the oat fallow was greatly superior to that on the pea; by the end of July that on the pea fallow had much improved, and was apparently in every respect equal to that on the

oat fallow—both of which were good. During the protracted drought which prevailed from the middle of September and throughout October, clover on the oat fallow suffered very little injury, while the stand of plants on the pea fallow has been greatly reduced. The past has been a season singularly favorable for young clover; the stand of plants here, over nearly all of the ground sown, is good, and, from one portion of ground from which wheat had been reaped, quite a heavy growth of clover from seed sown the past spring was mowed for hay about the middle of September.

448 bushels of oats were sown from the middle to the 23d of March; the crop from which was generally good, but in harvesting much loss and injury was sustained from the frequent rains. In value as chopped food they were reduced probably not less than one-third.

On the 27th and 28th of May 100 bushels of cow and 16 bushels of black-eyed peas were sown broadcast as a fallow crop for wheat. The season proved unfavorable for this crop—the grass, in consequence of the continued rains, nearly smothered the growth of peas in their early stages; they subsequently, however, much improved, and a tolerable heavy growth of vines were ploughed under. A very small proportion of peas from these vines ripened. I suppose if every pea could have been collected, the whole would not have amounted to the quantity of seed originally sown. This presents an objection to this crop, as it is extremely difficult to procure seed at a reasonable or even at any price; and without detracting from or materially injuring their value as a fertilizer, the vines ought to yield a supply of seed wherewith to continue their use. The season has, however, been an exception.

The corn crop of this season covers an area of 615 acres, planted from the 25th to the 28th of April inclusive. Corn started well, though considerable difficulty again occurred in getting a good and regular stand of plants, from cut-worms, moles and other pests, and considerable portions of the crop subsequently suffered much from the very wet season. The unusually violent storm of wind and rain which passed over this section of country on the 24th of August, (which I cannot better describe than as a rapid succession of violent gales with hurricanes by way of interlude,) inflicted on nearly all of this crop a heavy and irreparable injury. Its appearance on the following morning was truly discouraging. Large spaces appeared as if passed over by a roller; some was torn up by the roots and broken off, ears rubbed off, and blades, where any were left, whipped into shreds. In a few days its appearance became considerably improved, and hopes were entertained that less damage would be sustained than was at first feared. The crop is now being gathered, and there is but too much reason to fear that the injury sustained from these various casualties will prove very considerable. Before the storm above alluded to the general crop had a very promising appearance; much of it unfortunately was so located as to be fully exposed to its utmost violence.

Since the beginning of the present year, 28,240 bushels of marl, 17,040 bushels of oyster shell lime, and 7000 bushels of stone lime from Pennsylvania have been applied—one half the quantity of marl and all of the oyster shell lime previous to planting corn, and the other half of the above quantity of marl and all of the stone lime on land fallowed for wheat this fall. Marl was applied at the rate of from 175 to 200 bushels, oyster shell lime from 70 to 75 bushels, and the stone lime from 40 to 50 bushels per acre. From two to three acres of land, formerly very wet, and containing a very large proportion of inert vegetable matter, received at the rate of 100 bushels of stone lime per acre. The whole application from the beginning of the year up to the present time extended over a surface of 525 acres, and was limited only by the difficulty of procuring further supplies. After erecting the kilns of oyster shells for burning, the number of bushels of shells in the aggregate was ascertained as accurately as possible by calculating their cubic contents. The lime after burning, and before being slaked, was measured out in boxes made to hold one bushel, and the result as then presented was a return of 12½ bushels of unslaked lime for every 18 bushels of shells. This was a result which I did not anticipate, for until I had seen some remarks made by you in the Register, that 18 bushels of shells would only yield 14 bushels of lime, I had supposed a bushel of shells would have yielded at least an equal quantity of lime. This falling off adds much to the expense of this material for furnishing the desirable calcareous ingredient to the soil. The above quantity of shells was here carted to the near vicinity of wood suitable for the burning of them, a distance of from 1½ to 2 miles, and consequently proved a very expensive application. If the results of the application of the northern stone lime should prove as beneficial as has the application of marl and oyster shell lime hitherto, and can be procured at a reasonable price, say from 7 to 8 cents per bushel, it will prove by far the cheapest application, especially on farms located on the river where it has to be carted to considerable distances. The above stone lime contained, I believe, upwards of 31 per cent. of magnesia. I have formerly known magnesian lime used with advantage, though never containing so large a proportion of that ingredient; and from the general objections entertained against the use of this kind of lime, (magnesia having been supposed injurious to soils,) doubts were entertained as to the propriety of using it to so large an extent. The assurance, however, which you have given, that to this same quality of lime are the farmers in the most highly improved districts of Pennsylvania indebted for the great improvements made on their lands, has operated to remove all doubts on this head as to its utility.

From the end of January to the end of April 2620 loads of manure from the stable yards and cattle pens were hauled out and applied as a top-dressing, chiefly on clover. The above quantity of manure was exclusive of a very large bulk of wheat straw applied in the same way over a surface of upwards of 50 acres, thickly covered; the benefits from which were very marked and gratifying. Nearly all of the straw covered land that was fallowed for wheat this fall, as also a considerable proportion of that covered with manure from the yards, &c. From the drought which prevailed during the greater portion of the following season, not a little difficulty was experienced from the very generally dry state of the ground.

On that portion which had been covered with straw no such difficulty was experienced, it retaining sufficient moisture to render ploughing easy; while on soil of similar texture, and, in every respect, the covering of straw excepted, the same was hard, dry, and difficult to plough.

In the first number of "Notes on Sandy Point estate," reference was made to the then general inferiority of the stock of cattle, sheep and hogs. The introduction of the Durham breed of cattle is, from present appearances, likely to effect here a desirable improvement in this species of stock, though as yet there has not been sufficient time to properly test their value. Some of the raising stock from a Durham bull, out of the common breed of cows, are looking very likely. The stalling of oxen used for labor is here being so far attended with much benefit and improvement—from 76 the number has been reduced to 44; and, so soon as some young animals are old enough for work, their numbers will be again increased to 48, and which it is now believed will be sufficient for the operations on the estate, for which their labor is required. In other words, 48 oxen will, under the improved arrangements which Mr. Bolling has made for their more comfortable shelter and accomodation, feeding and the working of only young and efficient animals, do all the work formerly requiring from 76 to 80. We are yet under the necessity of working several oxen which are much too aged, and consequently not as efficient as would be desirable, but which evil will be remedied, and in future avoided, as speedily as young animals can be raised to supply their place.

A ram from the flock of John A. Selden, esq., of Westover in this county, a cross I believe of the Leicester and broad-tail breed of sheep, and when received was, for his age, one of the finest sheep I have yet seen in this country, has been introduced here, and whose lambs, out of the common and inferior variety of ewes, have exhibited a very decided improvement.

With a view to improve the stock of hogs on this estate, the Berkshires were introduced. As yet the realizing of the benefits anticipated is very doubtful. The pure Berkshires, or what was got as such, whether their tails had the genuine twist, or whether they had the requisite number of white hairs, and these on the proper and exact spots, for the real "Simon Pures" of this much cracked up breed, I do not know. Certain it is, that, with advantages greatly superior to those accorded to our common stock of hogs, the attempt to raise them has been a failure; they proved small, very indifferent breeders, bringing from two to five pigs at a litter, and these, "like angel's visits, few and far between." One sow, a likely looking animal, has, with superior advantages, not produced a litter in twelve months. These are now consigned to the fattening pen as a hopeless stock. Shoats, a cross from the Berkshire boar with our common sows, are much more likely than the pure breed, though even they do not now present that degree of improvement that was at one time anticipated. A boar of what is termed the "Improved Skinner" breed has been introduced to sows the progeny of the common Virginia hog and Berkshire boar. Whether any further improvement may thus be effected is yet uncertain. Steps are now being taken for the better accommodation and more economical feeding of these animals, with hopes that their improvement may thereby be accelerated.

A. Nicol.

RECENT AND EXTENSIVE MARLING IN SOUTH CAROLINA.

Communicated for the Farmers' Register.

Columbia S. C. Nov. 30, 1842.

Dear sir—It affords me great pleasure to comply with your request, to furnish you with a statement of my marling operations during the first year, and the result of them so far as it has been ascertained.

I commenced in November last to marl my plantation at Silver Bluff, on Savannah river. There is no marl on the place. I procured it from Shell Bluff on the same river, and had to boat it 12 miles up the stream. It requires eleven prime hands to man the boat I use, and when the river is not too high they make two trips a week, loading and unloading themselves. They bring about 1100 bushels at a load. The marl is landed at a spot below high water mark, and during the whole crop season two other hands and two carts are constantly engaged in hauling it to a place of security on the top of the bluff. At other times it is hauled directly from the landing to the fields. There are however 13 hands and 2 mules lost to the crop. My boat, which is a common pole boat, was built chiefly by my own people, and cost me about $600, including their labor. There have been incidental expenses to the amount of about $200 this year. During the year ending on the 8th of November, there were 85 trips made and about 93,000 bushels brought up. I think I can safely calculate on bringing up 100,000 bushels per annum hereafter, with the same force. I mention these facts that every one may form his own estimate of the cost of procuring marl under similar circumstances. My calculation is that it costs me about 2 cents a bushel delivered on my bluff. To one having marl on his own premises nearly the whole of this expense would be saved. I am enabled, by omitting to open new land, to haul out and spread this marl, without interfering with other plantation work, or lessening the number of acres planted per hand. In hauling out I have not been able to do as much as they do in Virginia. Mr. Ruffin, the author of the marling system, hauled 24 loads of 5¾ bushels with each cart per day a distance of 847 yards; I have done but little over half as well. I use mules however, and land being level carried 6¼ bushels at a load. I found the mules could not stand trotting back with the empty cart. The marl weighs about 105 lbs. per bushel. My land was laid off in squares, so many to an acre and a load dropped in each square. It was spread by hand; each negro taking his square, and carrying his marl on a board or in a small tray. A prime fellow can spread an acre in a day. But it is a hard task, and counting the gang round I have not averaged over half an acre for each worker. The marl spreads best when damp. It will then yield to the hand, and lumps are in general easily crushed.

Shell Bluff is a bold cliff on Savannah river, over 200 feet high and in some places more than 100 feet perpendicular. Professor Vanuxem, who

examined it some years ago (see Farmers' Register, vol. vii. p. 70, and also vol. x. p. 487) discovered 14 varieties of marl, varying in quality from 37.2 to 93.4 per cent. of carbonate of lime. In using the marl I have excluded the inferior as much as possible, and have not found the very best in any great quantity. I tested the quantity of carbonate of lime in one specimen taken at random from each boat load brought up this summer, and found the average of 34 loads to be 62.8 per cent. varying from 51 to 77. In every specimen there was a small proportion of oxide of iron and clay and sand, usually in about equal quantities. There were, no doubt, other component parts which I did not ascertain; but I satisfied myself that there was neither gypsum nor magnesia. The marl presents various appearances, being in color, white, brown, olive, yellow and violet, and in consistency from sand to soft stone. Some of it appears to be a concretion of shells, from a size scarcely visible to the naked eye to an inch in diameter. There is no hard limestone, and it is doubtful whether any of the marl here will make lime, though it is an excellent cement. Much of that which I have used has been cut from the face of the cliff with pick-axes. It falls down sometimes in fine grains, sometimes in masses. At every handling it breaks up finer, and exposure to the air assists disintegration. I do not burn or pound it, or use any preparation whatever, but spread it as I get it. Where it was spread last winter, an observer would readily discover it, and lumps as large as an egg, and occasionally much larger, are to be seen. A mere passer by, however, would not notice that the land had been marled. At every working it is more and more mixed with the soil. But I imagine it will be several years before it is completely combined with it, and until then the full effect of this marl cannot be known. A difference was apparent in this crop between the effects of that spread early in February and that spread in the latter part of April.

By the 22d of April last, I had marled 175 acres at the rate of 200 bushels to the acre. Of these I planted 50 acres in corn on the 17th March, 50 acres in cotton on the 10th April, and 75 acres in cotton on the 22d April. These three cuts are in the same field, and adjoining, being separated only by turn-rows, yet the soils vary considerably.

In the corn, I laid off 4 separate acres along the turn-row, as nearly equal in quality as possible. The one supposed to be the best was left without marl. The others were marled with one, two and three hundred bushels respectively. It was all of the same boat load, and contained 54 per cent. of carbonate of lime. This land has been in cultivation more than one hundred years. I have planted it myself 11 of the last 12 years, and sowed it in oats the other year. I have given it three light coats of manure, the last in 1839. It is a light, gray, sandy soil, of which the following was the analysis before marling, viz.

Water lost at 300° - - -	2 per cent.
Vegetable matter - - -	3
Silica - - - - -	80
Alumina - - - - -	11
Oxide of iron - - - -	2
Loss - - - - -	2
	—100

This cut was in cotton last year, and my expectation was that with common seasons it would produce 12 bushels of corn per acre. And had I not kept the unmarled acre as a test, I should have set down all over that quantity to the credit of the marl. The corn came up badly, and suffered by the birds. The four experimental acres were cultivated precisely as the rest of the cut, and were distinguisned only by the posts which marked the corners of each acre. From the first however the marled corn exhibited a different appearance. It was stouter and of a much deeper color. As the season advanced, the difference became greater. The marled corn was as dark a green as swamp corn usually is. The fodder was pulled on the 3d August, and after hanging two days and a half on the stalk in dry and rather windy weather, weighed as follows:

			Increase.	Per cent.
Unmarled acre		250 lbs		
Marled, at 100	bushels	285 "	35 lbs.	14
" " 200	"	314 "	64 "	25.6
" " 300	"	261 "	11 "	4.4

The corn was gathered on the 24th October, being thoroughly dry and having shrunk as much as it would in the field. There appeared to be little or no difference in point of soundness. It was shucked clean and measured in a barrel. The unmarled corn shelled out 2 quarts less to the barrel than the marled. The following was the result:

		Increase.	Per cent.
Unmarled acre	17 bush.		
Marled, at 100 bushels	21 "	4	23.5
" " 200 "	21 "	4	23.5
" " 300 "	18½ "	1½	8.8

From this it would appear that 100 bushels of marl was as efficacious as 200, and perhaps in such land as this such may be the fact. It appears also probable that 300 bushels to the acre is too much. I ought however to state that this last acre had a slight sink in the centre, and that the slopes around it are much thinner than the average land. These constitute about one-fifth of the acre, and were evidently injured by the marl. It was a bad selection for the heaviest marling; but at the time it was made I did not suppose, judging by the rates at which they marled in Virginia, that 300 bushels would injure any land. My fear now is that 200 bushels may prove too much for soil like this; and I have accordingly determined to put only 150 bushels on the acre hereafter, until I see its further effects. This has been a remarkably productive season for corn. I think the unmarled acre in this cut made at least 5 bushels more than it would have done of an average year. I presume the marled acres have done so likewise. But whether it would be fair to attribute any of the 4 bushels increased to the peculiarity of the season operating on the marl I am wholly unable to decide. Supposing the increase from the season to be the same on the marled and unmarled land, and deducting 5 bushels from the produce of each acre there will be 33⅓ per cent. in favor of the ten best marled acres. This however is all conjecture. The average per acre of this whole cut was 18 bushels. The measurement of all but

the experimental acres was made however by wagon loads according to the usual plantation estimate, in which there is liberal allowance for shrinking, &c. Had the whole been measured in the same manner as the experimental acres were, the produce would have appeared greater. I have had this cut planted in corn once before, but having been absent the whole year, no account of it was preserved, and I do not know what it produced.

I selected also and laid off separately 4 acres of cotton along the turn-row of the 75 acre cut of cotton. At the time I thought them nearly equal in quality, and the one supposed to be the best of these was left unmarled, and 1, 2 and 300 bushels of marl spread upon the other three. It turned out however that the acre with 100 bushels of marl was inferior to the average of the cut, and that with the 200 bushels about equal to it, while the other two were far superior. I was deceived by the stalks grown the year before. The two first named acres being somewhat rolling, and the year a wet one, they produced as good cotton as the other two which were flat. The unmarled acre was not much if any superior to the one marled with 300 bushels, save that there was a spot where fodder stacks had stood in 1838-9, which produced nearly double the cotton of any other spot of the same size in either acre, and added probably 30 lbs. to the amount gathered from that acre. The marl on these acres contained, like that on the corn cut, an average of 54 per cent. of carbonate of lime. This land is of the kind commonly known as *mulatto* soil, and was cleared at least as early as the corn cut. It was certainly planted by the Indians in 1740. The following was the analysis of it before marling, for which, as well as for the analysis of the corn cut, I am indebted to the kindness of Prof. Ellet:

Water at 300° - - - - - -	3
Vegetable matter - - - - -	4.5
Silica - - - - - - - -	74
Alumina - - - - - - -	14.5
Oxide of iron - - - - - -	4

This cut was not planted until the 22d April, because it could not be marled before. A dry spell occurring immediately after, at the end of two weeks very little cotton had come up except in the unmarled acre in which there was about half a stand. My overseer becoming alarmed in my absence replanted the whole, and threw out the old seed wherever it had not come up. This was done on the 6th May, so that the crop of this cut dates from that period, which is at least a month later than I should have preferred. For my experience is that early cotton, like early corn, is almost always the best. I consider the two weeks start which one half the unmarled acre obtained in this instance as of considerable consequence to it. These early stalks could be distinguished until the bolls began to open. The difference between the marled and unmarled cotton was as obvious as it was in the corn. The leaf too appeared broader and the stalk stouter from the first. The following was the production of these four acres. I state the production of all, though that of the 1 and 200 bushels acres ought not to be compared with that of the other two, on account of the relative inferiority of the soil.

The unmarled acre	1111 lbs.	in the seed.
Marled do at 100 bushels,	846 "	"
" " at 200 "	1003 "	"
" " at 300 "	1318 "	"

The difference between the unmarled acre and that with 300 bushels of marl was 17.7 per cent. in favor of the latter. It would have been greater perhaps any other year than this, which has been almost as favorable for cotton as corn. The average production of the whole 75 acres was 966 lbs. per acre. I have had this cut in cotton 10 of the last twelve years; in corn 1, and in oats 1, and the following is a statement of its production of cotton for 6 of the 10 years; that of the other years not having been preserved.

1833	average pr.	acre	in seed	731 lbs.	manured lightly.
1834	"	"	"	784 "	
1835	"	"	"	951 "	manured lightly.
1836	"	"	"	451 "	
1840	"	"	"	497 "	
1841	"	"	"	500 "	manured.
1842	"	"	"	966 "	marled.

The other 50 acre cut of marled land was planted in cotton on the 10th April. It came up in good time and was a fine stand. This is also a light gray soil, with less clay than the mulatto land, and less sand than the corn cut. It is probably as old as either, and has been cultivated in much the same way. Although planted 10 days later than some other fields, and after all of them except the 75 acre cut, it soon appeared to be the oldest cotton and certainly matured the earliest of any. Immediately after the cold weather, about the 1st August, the rust commenced in it, and by the 20th of that month it had the appearance of a field after frost. Forms, small bolls, and even the leaves dropped. Most persons who saw it thought it had been cut off one half. I think myself it suffered to the extent of one fourth at least. But I have made on this cut this year 840 lbs. of seed cotton, which is nearly 50 per cent. more than I ever made on it before. The following is the average of its production for 4 other years.

1833	average pr	acre	in seed	569 lbs.	manured
1834	"	"	"	435 "	
1840	"	"	"	368 "	
1841	"	"	"	366 "	manured lightly.
1842	"	"	"	840 "	marled.

I think the injury from the rust nearly or quite equal to the benefit derived from the favorable season. And that the increase from the marl was greater on this cut than any other, because the earliest marled and most seasonably planted. The rust here was more injurious than in any other field, and I might have attributed it to the marl, but that the 75 acre cut also marled suffered least of all. I am inclined to think that the most advanced cotton was most affected, and the youngest least; and that marl had no influence one way or the other. It is worthy of remark, that while all my other cotton suffered from lice and the worm both, neither made their appearance on the marled land.

I have troubled you with this lengthy detail of my operations, because this being the first serious experiment with marl in South Carolina (that I know of) it may be interesting to those who have this earth within their reach, to know the particulars. From the facts I have stated, each one can form his opinion on nearly as good data as I can my own. I can only add that my expectations for the first year have been fully an-

swered. I did not calculate on any of those magical results which agricultural experimenters so often look for, and so seldom realize to the full extent. I regard an increase of 20 per cent. as a very handsome return, and if it only does as well another year, I shall at all events be repaid for my labor even if the beneficial effect of the marl ceases then. But the experience of all who have used it is, that it continues to improve the soil every year, until thoroughly disintegrated and combined with it; and that with proper culture it never declines from its maximum. Under these circumstances, and with these hopes, I shall continue myself to prosecute the business vigorously during the summer. I have hauled marl over 160 acres, and have now at my landing enough to cover 300 acres more. My great regret is that I did not engage in the business sooner. I have long known Shell Bluff, and for some years had heard of Mr. Ruffin's successful introduction of marl into the culture of Virginia. But I had not read his 'Essay on Calcareous Manures,' nor examined Shell Bluff, until the summer of 1841. The idea of obtaining marl from that spot was first suggested to me by my friend Mr. Dickenson, of Georgia; and after a careful perusal of Mr. Ruffin's Essay, and an analysis of the varieties of marl there, I determined to try the experiment. I have during the course of it received much encouragement and valuable practical information from Mr. Ruffin himself, to whom in common with all other beneficia ies of this inestimable treasure, I owe a debt of gratitude which cannot be easily cancelled. I am, my dear sir,

With great regard and esteem,
Your obedient servant,
J. H. HAMMOND.

HON. WHITEMARSH B. SEABROOK,
President of the State Agr. Soc.

THE GARDEN SNAIL.

From the Southern Agriculturist.

There are two very different species of snail in the gardens in Charleston. They are both of foreign origin, and are both considered very troublesome.

The large round snail has long been known in the gardens; it is the *Helix aspersa*, a very common and extensively diffused species in Europe. It is said to have been imported by some of our French ancestors, as an article of food in certain cases of disease. It is much more probable that we are indebted for its introduction to the ballast from European vessels.*

The other species of snail is much the most formidable enemy in our gardens, and is also a foreigner—it is the "*Bulimus decollatus*," from the south of France, and described in this country by Mr. Say, as the "*Bulimus mutilatus*," from specimens sent to him by Mr. Stephen Elliott.

It is of much more recent importation than the "*Helix aspersa*," and is thought to destroy that snail. In gardens in which the round snail was once very abundant, not an individual can now be found—but the long snail has become extremely numerous. It is difficult to date the introduction of such animals, but about the year 1813, this Bulimus made its appearance in some of the gardens in the lower part of Meeting-street, and has since been gradually spreading over the whole city.

It is gathered by gardeners, and frequently thrown alive into the river; the shells are therefore occasionally found on the neighboring shores, particularly on the beach at Sullivan's Island. Individuals not unfrequently reach the shore alive, and with strength enough to seek the herbage for food and shelter—and thus they may be propagated in various directions around the city.

Within the last two years, they have been observed in a garden on Sullivan's Island, and will probably extend their depredations there, as they have done in the city.

It is not known if they have as yet been found beyond the city, except in the garden at Sullivan's Island. E.

Charleston, S. C., 1842.

* This supposition has been ascertained to be a fact, as the garden of a gentleman in Charleston was never troubled with any slugs, until the season after he spread small ballast in the walks, which came from Europe.

NEW HORSE SHOE.

From the United Service Gazette.

A simple but most ingenious invention has been laid before us in the shape of an improvement in the horse shoe. It is that of making that part of the shoe which is now solid, concave; by which the foot is enabled to take a grip, which with the ordinary shoe is impossible. The principle is, in fact, that of the fluted skate; and whilst the shoe is, of course, lighter than when manufactured on the usual principle, it is equivalent in slippery weather, or on wood pavement, to one that is roughed. The concavity runs entirely round the shoe, having a strong rim in front, equal in thickness to the hoof of the horse's foot, and another at the back of half that thickness. This mode of formation, whilst it involves the use of a smaller quantity of iron, and consequently less weight, gives a far greater purchase, and is much more in accordance with the nature, form, and texture of the horse's foot. By preventing the necessity of turning up the shoe behind, it places the foot in a more natural position, and thus assists in bringing into operation the frog, instead of placing it out of action, and straining all the other parts of the foot.

PUBLIC SALE OF PROVISIONS AT LIVERPOOL, UNDER THE NEW TARIFF.

From the English Farmers' Journal.

Monday, the 10th inst., was the day fixed by the New Tariff for the payment of the reduced duties on salted provisions, and in consequence public sales to a considerable extent were announced to take place on the following day in Liverpool. These sales comprised 1,512 barrels of American beef, 2,199 barrels American pork, 321 barrels American hams, 691 barrels

Canadian pork, and 35 barrels Canadian beef, which excited considerable interest and curiosity. The attendance of town and country dealers was numerous, with some gentlemen from Ireland, the latter no doubt to watch the progress of a trade threatening to interfere with that which they have enjoyed exclusively so long. It must be observed that the greater portion of the United States' meat was imported some months ago, and having been cured before it was known that there would be a change in the British duties, was not so well suited to the taste of consumers here, as doubtless they will be rendered hereafter. The meat was generally very well fed, though rather fatter than the usual run of Irish. Of the beef, on the contrary, it was observed that it was not sufficiently well fed. The hams that were sold went at 30s. 6d. to 31s. per cwt. duty paid. Prime beef sold at 38s. to 39s. per barrel, duty paid ; a very old parcel went even lower. Pork went at 41s. to 46s. per barrel, duty paid. The Canadian pork realised 43s. to 46s. per barrel, duty paid ; and the little Canadian beef that was offered brought 46s. to 48s. for prime ; one lot prime mess 50s. per barrel, duty paid. Several parcels of American cheese were also offered, and sold at 36s. 6d. to 46s. 6d. per cwt., duty paid, for inferior to middling quality ; whilst a few lots of good brought 50s. to 54s. per cwt., duty paid.—

CHEAP MARLING.

[The following is a passage from a private letter just received, and which we take the liberty of publishing, because it presents an example of one of the cheapest marling operations. Yet many thousands of acres in lower Virginia still are neglected, which may be marled as cheaply, and which but a few years ago (as was the case with this field) could not have been sold for more than $3 the acre.—Ed. F. R.]

December 8, 1842.

I am now marling from the bank which you saw when you were here, and find by your calculation of the expenses of marling in the ' Essay on Calcareous Manures' that it cost me 99 cents per acre to put on 225 bushels of marl, (containing 80 per cent. of carbonate of lime,) exclusive of the labor of spreading ; and the marling of the remainder of the field of about 50 acres will not exceed $1.25. I was induced to make the calculation from reading an account of your marling on Coggins Point, the other day, and was surprised to find the difference in cost so great. My road was already open, having once been an old public road. I shall finish all my open land this winter, and some 15 or 20 acres of wood-land which I intend to clear.

FIRST LABORS OF A WORKING AGRICULTURAL SOCIETY.

The Agricultural Society of Prince George held its first stated meeting on the 10th instant. This small and unpretending society was established last spring, upon the *working plan*, and under the form of constitution and of procedure proposed at page 719, vol. ix. Farmers' Register, with the exception of a few changes of unimportant details. The result of this first meeting after commencing operations are such as to show that the plan will work in practice, (if continued as begun,) as well as it promised in theory. The society had only 26 members ; and of these, in obedience to the general requisition, 18 presented at the late meeting written statements of one or more experiments, made with care, and noted accurately. It is of little importance (for the great object in view) whether these experiments, or any one of them, may exhibit any remarkable results, or such as may lead to new and valuable practices. It is enough that the members have now learned and acted upon the simple fact that any plain farmer can properly conduct agricultural experiments—and even though totally unused to writing for the public eye, can record them accurately, and well enough for the purpose. *Every* experiment so made and noted, and reported, if upon any doubtful subject, must serve to make a somewhat nearer approach to truth and knowledge; and any number of cultivators continuing for years together thus to seek truth by accurate experiments, and to bring together all the results, cannot fail to produce effects of great value to each individual, and to the community. Each person so contributing, however diffident and awkward he may have felt at first in attempting a task so totally new to him, will find the effort easy, and the labors pleasing and instructive, and profitable in reference to his general habits and procedure as a farmer, as well as for the particular lights gained by the experiments made. For a society to *merely commence* such a course of procedure is of itself effecting much ; and much more may be confidently expected from each succeeding year's operations.

This society having been formed upon our recommended plan, (above referred to,) we may be pardoned for expressing something of *fatherly* feelings of gratification and partiality, in witnessing its first and useful efforts. And it would be still more gratifying to us, and appropriate in all respects, to have closed our editorial labors by publishing the report of the first experiments and labors of this society. This however is impossible

in the few pages of this volume yet to be filled, and in the few days of our editorial and public life which yet remain unfinished.

In addition to the regular duties of members, we learn that the society has taken measures to obtain an accurate statement of the lands marled and limed in the county of Prince George, such as, and more full than the report we were lately enabled to publish for the county of King William. Every such statement will be both interesting and beneficial. And if it could be made general throughout the state, by legislative authority, and the operations of each subsequent year be thereafter added, the beneficial consequences would be perhaps greater than the publication of any statistics whatever. This is one of the few measures recommended to the legislature by the Board of Agriculture; and, as it will not cost the treasury the expenditure of a dollar, there may be some hope indulged of the execution. Among the beneficial consequences of such general and accurate reports of the applications of these permanently improving measures, would be the following:

The large amount of such labor already performed would be astonishing to all; and the magnitude of the operations, and their long continuance and annual increase, would prove, more satisfactorily than any reasoning or statements of particular profitable results, the great and certain profit thence derived. The facts thus broadly and clearly displayed, and the inevitable deductions from them, would alone serve to induce marling to be commenced by very many farmers, who have, for want of information, neglected it heretofore; and would cause liming to be commenced by far greater numbers, and the mode of improvement to be introduced in perhaps 30 or more of the upper counties of Virginia, where the practice has heretofore been unknown, and may otherwise remain untried for half a century to come.

Even in the counties where great improvement and profits have already been derived from marling and liming, the emulation of each individual would be stimulated, by such reports of the operations of each, to increase his own exertions; and probably the second year's reports would show a great increase of attention and effort, even where least wanting before. None of us do, in this or any other respect, *all* that we know to be right, or that would be profitable. And the most sanguine or the most industrious and judicious marlers and limers would be thus urged to increased and profitable exertions, as well as, in a far greater degree, the more indolent, neglectful, or heretofore skeptical, to make their first efforts in this mode of improvement.

And lastly—upon any grounds whatever of estimating values that can be applied to the reports of marling and liming thus to be obtained, the magnitude of the intrinsic value of agricultural fixed capital and wealth, and of annually increasing income, would both be so enormous in amount, that nothing could so strongly show the importance of using every means for *diffusing agricultural information and knowledge*, to which cause much the larger part of these operations are altogether due. Our legislature might possibly thus learn that any sum judiciously expended in furtherance of the great end of agricultural improvement, is not lost, but is as the seed sown which will return to the commonwealth a future harvest of a hundred-fold of increase.—Ed F. R.

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